

NATIONAL PROFILE

National Profile

The **National Profile** section contains figures showing trends and the distribution of nationally reportable sexually transmitted diseases (chlamydia, gonorrhea, syphilis and chancroid) by age, sex, race/ethnicity, and location for the United States. Where relevant, the figures illustrate progress towards specific targets* for the nation published in U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

* See the **Appendix** for a listing of the Healthy People 2010 objectives for the diseases addressed in this report.

Chlamydia

Chlamydia trachomatis infections are the most commonly reported notifiable disease in the United States. They are among the most prevalent of all STDs and, since 1994, have comprised the largest proportion of all STDs reported to CDC (Table 1). In women, chlamydia infections, which are usually asymptomatic, may result in pelvic inflammatory disease (PID), which is a major cause of infertility, ectopic pregnancy, and chronic pelvic pain. Data from a randomized controlled trial of chlamydia screening in a managed care setting suggest that screening programs can lead to a reduction in the incidence of PID by as much as 60%.¹ As with other inflammatory STDs, chlamydia infection can facilitate the transmission of HIV infection. In addition, pregnant women infected with chlamydia can pass the infection to their infants during delivery, potentially resulting in neonatal ophthalmia and pneumonia.

The increase in reported chlamydia infections during the last 10 years reflects the expansion of chlamydia screening activities, use of increasingly sensitive diagnostic tests, an increased emphasis on case reporting from providers and laboratories, and improvements in the information systems for reporting. However, many women who are at risk are still not being tested, reflecting, in part, lack of awareness among some health care providers and the limited resources available to support screening. Chlamydia screening and reporting are likely to expand further in response to the recently implemented Health Plan Employer Data and Information Set (HEDIS) measure for chlamydia screening of sexually active women 15 through 25 years of age who receive medical care through managed care organizations.² To better monitor trends in disease burden in defined populations during the expansion of chlamydia screening activities, data on chlamydia positivity among persons screened in a variety of settings are used; in most instances, test positivity serves as a reasonable approximation of prevalence.³

- In 2000, for the first time, all 50 states and the District of Columbia had regulations requiring the reporting of chlamydia cases to CDC.
- In 2004, 929,462 chlamydia infections were reported to CDC from 50 states and the District of Columbia (Table 1). This case count corresponds to a rate of 319.6 cases per 100,000 population, an increase of 5.9% compared with the rate of 301.7 in 2003. The reported number of chlamydia infections was more than two and one half times the number of reported cases of gonorrhea (330,132 gonorrhea cases were reported in 2004) (Table 1).
- From 1987 through 2004, the rates of reported chlamydia infection increased from 50.8 to 319.6 cases per 100,000 population (Figure 1, Table 1). The continuing increase in reported cases likely represents the further expansion of screening for this infection, the development and use of more sensitive screening tests, and more complete national reporting.
- For the years 1996-2001, the chlamydia rates in the Southern region of the United States were higher than the rates in any other region of the country (Figures 2-4, Table 3). Before 1996, chlamydia rates were highest in the West and Midwest, where substantial public resources had been committed for screening

programs in family planning clinics. For the years 2002-2004, overall rates were highest in the Midwest although rates among women remained highest in the South. Rates have remained lowest in the Northeast.

- In 2004, the overall rate of reported chlamydia infection among women in the United States (485.0 cases per 100,000 females) was over 3 times higher than the rate among men (147.1 cases per 100,000 males), likely reflecting a greater number of women screened for this infection (Tables 4 and 5). The lower rates among men suggest that many of the sex partners of women with chlamydia are not diagnosed or reported. However, with the advent of highly sensitive nucleic acid amplification tests that can be performed on urine, symptomatic and asymptomatic men are increasingly being diagnosed with chlamydia infection. From 2000 through 2004, the chlamydia infection rate in men increased by 47.7% (from 99.6 to 147.1 cases per 100,000 males) compared with a 22.4% increase in women over this period (from 396.3 to 485.0 cases per 100,000 females) (Tables 4 and 5).
- Among women, the highest age-specific rates of reported chlamydia in 2004 were among 15- to 19-year-olds (2,761.5 per 100,000 females) and 20- to 24-year-olds (2,630.7 per 100,000 females). These increased rates in women may be, in part, due to increased screening in this group. Age-specific rates among men, while substantially lower than the rates in women, were highest in the 20- to 24-year-olds (Figure 6, Table 10).
- In 2004, the rate of chlamydia among African-American females in the United States was more than seven and a half times higher than the rate among white females (1,722.3 and 226.6 per 100,000, respectively) (Table 11B). The chlamydia rate among African-American males was 11 times higher than that among white males (645.2 and 57.3 per 100,000 respectively).

Chlamydia Screening and Prevalence Monitoring Project

- Chlamydia screening and prevalence monitoring activities were initiated in Health and Human Services (HHS) Region X (Alaska, Idaho, Oregon, Washington) in 1988 as a CDC-supported demonstration project. From 1988 through 1996, the screening programs in HHS Region X family planning clinics demonstrated a 68% decline in chlamydia positivity from 15.1% to 4.9% among 15- to 24-year-old women (Figure 8). Since that time, there has been a 57% increase from 4.9% to 7.7%; chlamydia positivity was adjusted for changes in laboratory test methods and associated test sensitivity.^{4,5}
- In 1993, chlamydia screening services for women were expanded to three additional HHS regions (III, VII, and VIII) and, in 1995, to the remaining HHS regions (I, II, IV, V, VI, and IX). In some regions, federally-funded chlamydia screening supplements local- and state-funded screening programs.
- In 2004, the median state-specific chlamydia test positivity among 15- to 24-year-old women who were screened during visits to selected family planning clinics in all states and outlying areas was 6.3% (range 3.2% to 16.3%) (Figure 7). In all states chlamydia positivity was greater than the HP2010 target of 3%.⁶ See **Appendix** (Chlamydia, Gonorrhea, and Syphilis Prevalence Monitoring) for details.

- After adjusting trends in chlamydia positivity to account for changes in laboratory test methods and associated increases in test sensitivity (see **Appendix**), chlamydia test positivity decreased in 2 of 10 HHS regions from 2003 through 2004, increased in 6 regions, and remained the same in 2 regions (Figure 8).
- Additional information on chlamydia screening programs for women of reproductive age and chlamydia among adolescents and minority populations can be found in the **Special Focus Profiles**.

¹ Scholes D, Stergachis A, Heidrich FE, Andrilla H, Holmes KK, Stamm WE. Prevention of pelvic inflammatory disease by screening for cervical chlamydial infection. *N Engl J Med* 1996;34(21): 1362-66.

² National Committee for Quality Assurance (NCQA). *HEDIS 2000: Technical Specifications*, Washington, DC, 1999, pp. 68-70, 285-286.

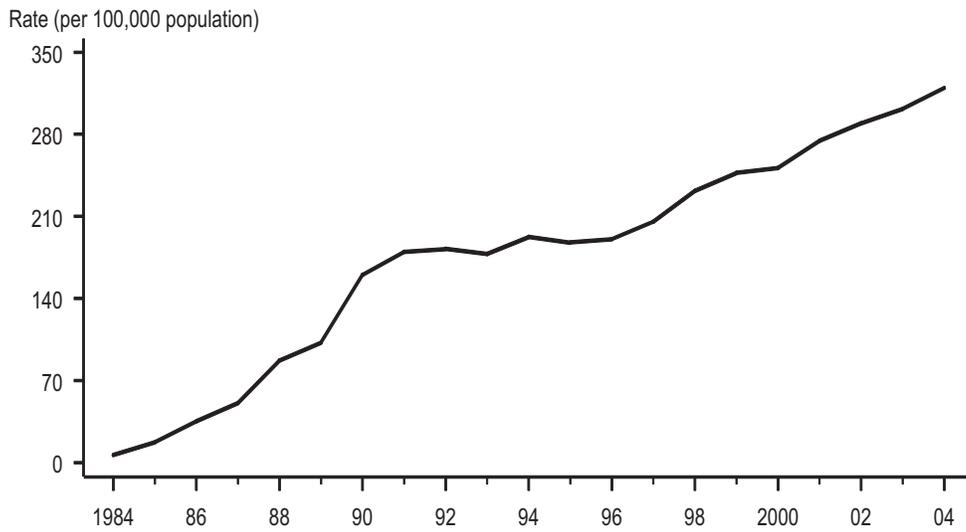
³ Dicker LW, Mosure DJ, Levine WC. Chlamydia positivity versus prevalence: what's the difference? *Sexually Transmitted Diseases* 1998;25:251-3.

⁴ Dicker LW, Mosure DJ, Levine WC, et al. Impact of switching laboratory tests on reported trends in *Chlamydia trachomatis* infections. *Am J Epidemiol* 2000;51:430-5.

⁵ Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2004 Supplement: Chlamydia Prevalence Monitoring Project Annual Report 2004*. Atlanta, GA: U.S. Department of Health and Human Services (available first quarter 2006).

⁶ U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

Figure 1. Chlamydia — Rates: United States, 1984–2004



Note: As of January 2000, all 50 states and the District of Columbia had regulations requiring the reporting of chlamydia cases.

Figure 2. Chlamydia — Rates by state: United States and outlying areas, 2004

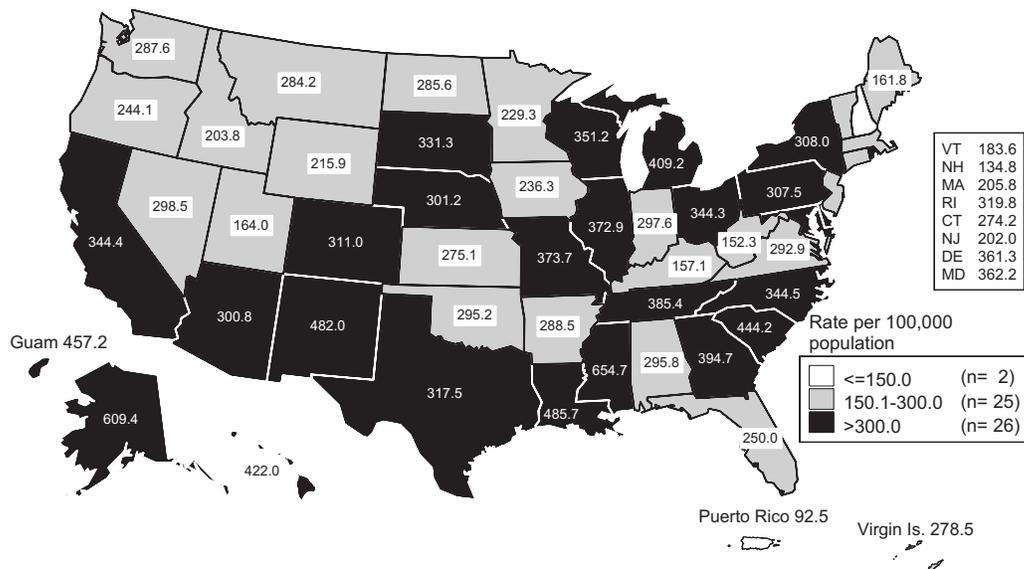


Figure 3. Chlamydia — Rates by county: United States, 2004

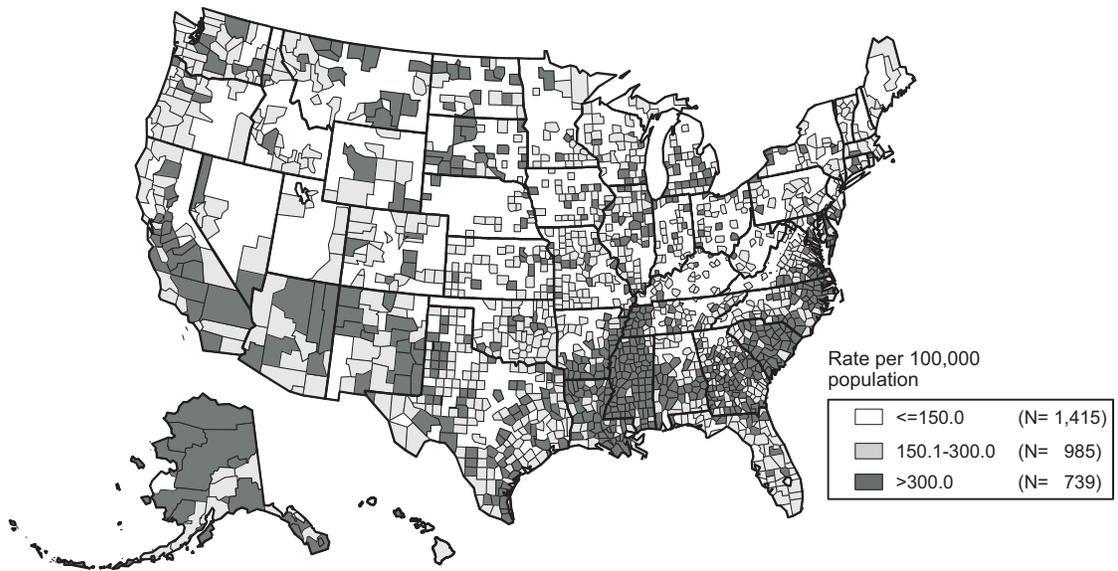


Figure 4. Chlamydia — Rates by region: United States, 1984–2004

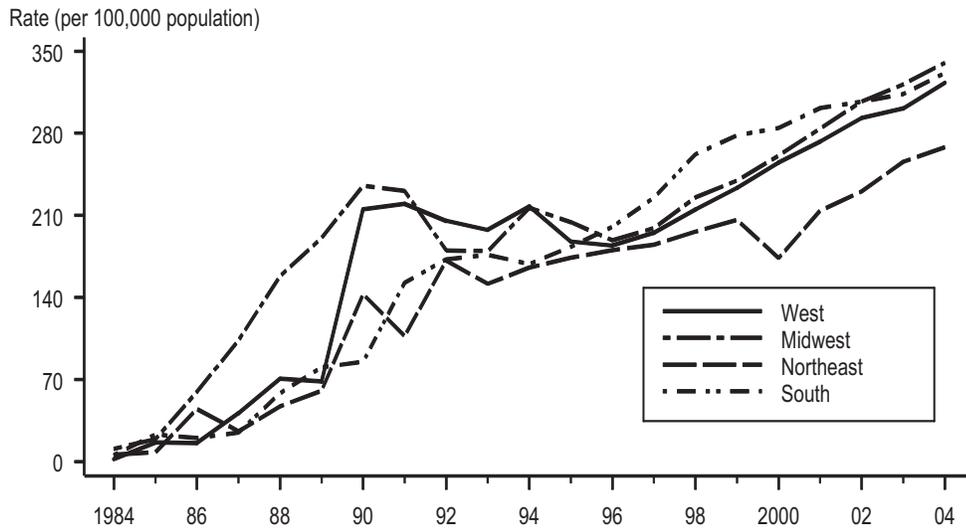


Figure 5. Chlamydia — Rates by sex: United States, 1984–2004

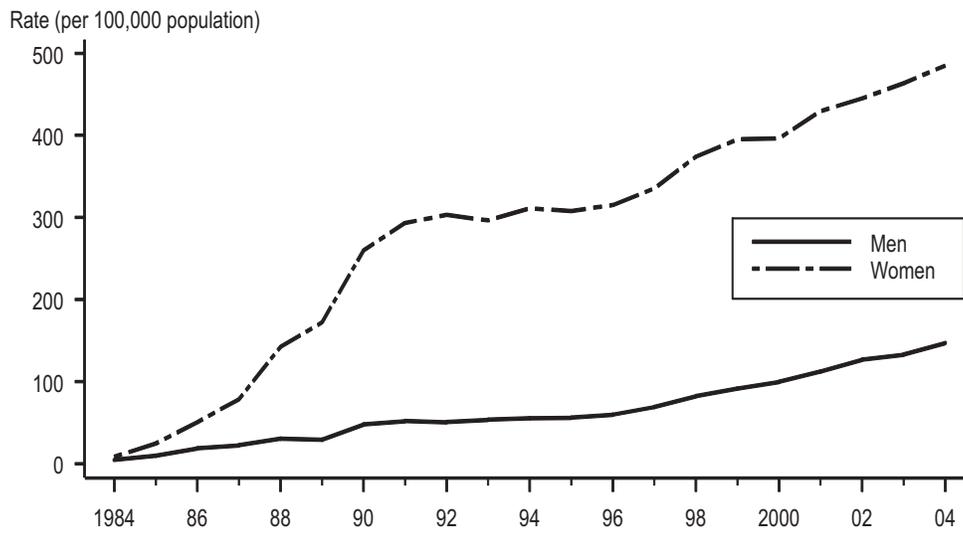
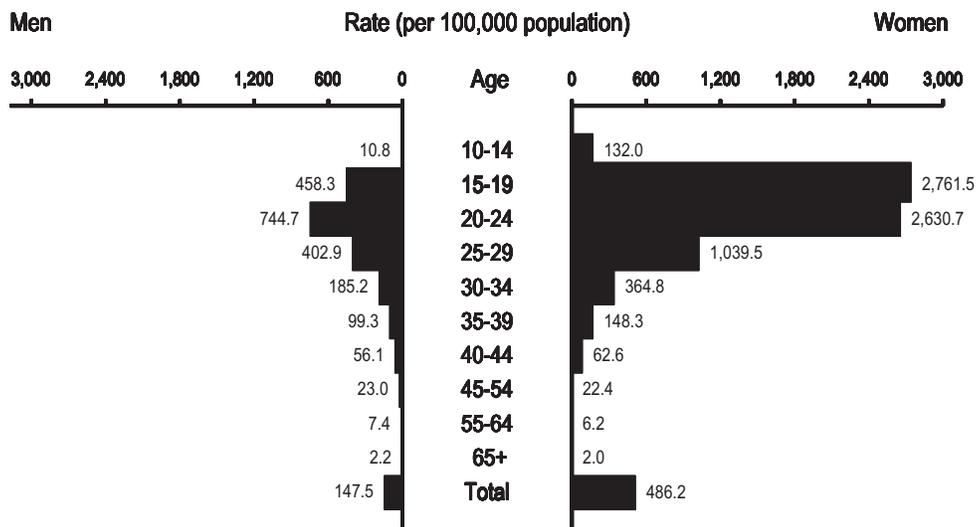
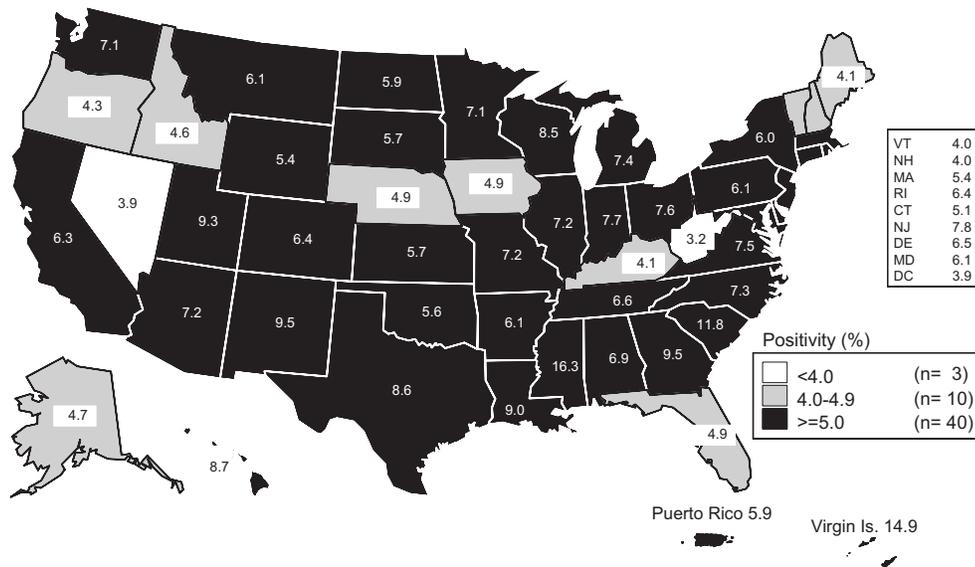


Figure 6. Chlamydia — Age- and sex-specific rates: United States, 2004



Note: See Table 10 and Appendix (Chlamydia Morbidity Reporting) for more information.

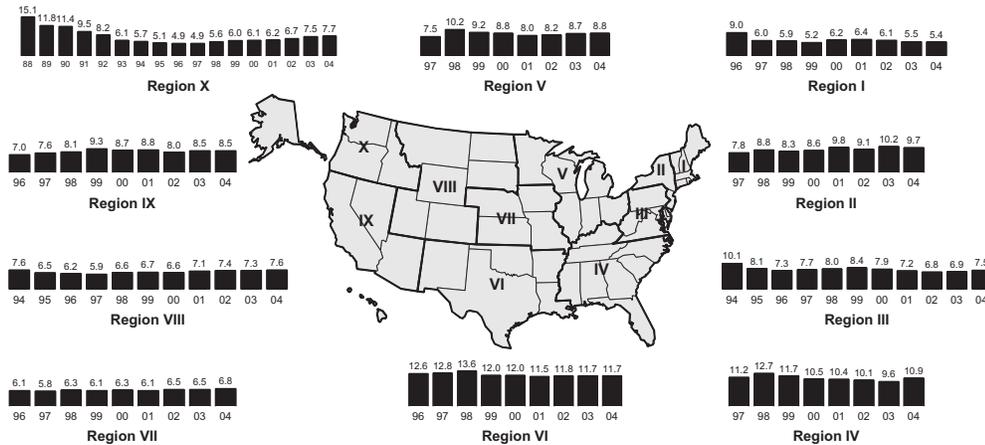
Figure 7. Chlamydia — Positivity among 15- to 24-year-old women tested in family planning clinics by state: United States and outlying areas, 2004



Note: Includes states and outlying areas that reported chlamydia positivity data on at least 500 women aged 15-24 years screened during 2004.

SOURCE: Regional Infertility Prevention Projects; Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

Figure 8. Chlamydia — Trends in positivity among 15- to 24-year-old women tested in family planning clinics by HHS region, 1988–2004



Note: Annual positivity adjusted for changes in laboratory test method and associated increases in test sensitivity. See Appendix (Chlamydia, Gonorrhea, and Syphilis Prevalence Monitoring) for more information. See Appendix for definition of Health and Human Services (HHS) regions.

SOURCE: Regional Infertility Prevention Projects; Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

Gonorrhea

Gonorrhea is the second most commonly reported notifiable disease in the United States. Infections due to *Neisseria gonorrhoeae*, like those resulting from *Chlamydia trachomatis*, are a major cause of pelvic inflammatory disease (PID) in the United States. PID can lead to serious outcomes such as tubal infertility, ectopic pregnancy, and chronic pelvic pain. In addition, epidemiologic and biologic studies provide strong evidence that gonococcal infections facilitate the transmission of HIV infection.¹

From 1975 through 1997, the national gonorrhea rate declined 74.3% following implementation of the national gonorrhea control program in the mid-1970s (Table 1). Gonorrhea rates subsequently appeared to plateau for several years; however, the gonorrhea rate has decreased 11.8% from 2000 to 2004. (Figure 9 and Table 1). True increases or decreases may be masked by changes in screening practices (affected by simultaneous testing for chlamydia), use of diagnostic tests with different sensitivities, and changes in reporting practices.²

For most areas, the number of gonorrhea cases reported to CDC is affected by many factors, in addition to the occurrence of the infection within the population. As with reporting of other STDs, reporting of gonorrhea cases to CDC is incomplete.³ In addition, reporting practices for gonococcal infections may have been biased towards reporting of infections in persons of minority race or ethnicity, who are more likely to attend public STD clinics.^{2,4} For such reasons, supplemental data on gonorrhea prevalence in persons screened in a variety of different settings are useful in assessing disease burden in selected populations.

- In 2004, 330,132 cases of gonorrhea were reported in the United States. The rate of reported gonorrhea in the United States was 113.5 cases per 100,000 population in 2004 (Figure 9 and Table 1), which was the lowest rate of reported gonorrhea ever.
- In 2004, 29.7% of gonorrhea cases were reported by STD clinics. This is a change from 1984, when 73.6% of gonorrhea cases were reported by STD clinics (Figure 10 and Table A2). In 2004, similar to previous years, a higher proportion of male gonorrhea cases were reported from STD clinics than were female cases (42.7% and 17.9% respectively).
- In 2004, only 7 states and Puerto Rico had gonorrhea rates below the Healthy People 2010 (HP2010) national target of 19 cases per 100,000 population (Figure 11 and Table 12).⁵
- In 2004, 1,330 (42.4%) of 3,139 counties in the United States had gonorrhea rates at or below the HP2010 national target of 19 cases per 100,000 population. Rates per 100,000 population were between 19 and 100 in 1,139 counties (36.3%), and greater than 100 in 670 counties (21.3%). The majority of counties with greater than 100 cases per 100,000 population were located in the South (Figure 12).

- As in previous years, in 2004 the South had the highest gonorrhea rate among the four regions of the country. However, the gonorrhea rate in the South has declined by 22% from a rate of 184.0 per 100,000 population in 2000 to 143.5 in 2004. In contrast, the gonorrhea rate in the West has increased by 27.3% from 57.2 cases per 100,000 population in 2000 to 72.8 in 2004. Rates in the Northeast (80.6 in 2004) and the Midwest (134.3 in 2004) have shown minimal change since 2000 (Figure 13 and Table 13).
- Prior to 1996, rates of gonorrhea among men were higher than rates among women. For the third straight year, however, gonorrhea rates in women are slightly higher than in men (Figure 14). In 2004 the gonorrhea rate among women was 116.5 and the rate among men was 110.0 cases per 100,000 population (Tables 14 and 15).
- From 2000 to 2004, gonorrhea rates among women increased 31.3% in the West, and decreased 18.6% in the South. Over the same time period, gonorrhea rates among men increased 24.1% in the West, and decreased 25.2% in the South (Figure 13 and Tables 14 and 15).
- The overall gonorrhea rate in selected large cities was 196.9 cases per 100,000 population in 2004. This rate has decreased 19.5% since 2000 when it was 244.7 cases per 100,000 population. All of these cities had rates higher than the HP2010 target of 19 cases per 100,000 population (Table 16). In 2004, 42.5% of gonorrhea cases were reported by these selected cities (Table 17). Similar to previous years, in 2004 the total gonorrhea rate among males in these selected large cities (204.0) remained higher than that among females (189.4) (Tables 18 and 19).
- Changes in gonorrhea rates from 2000 through 2004 differed by racial/ethnic group. Gonorrhea rates decreased by 19.1% during this time period for African-Americans from 778.1 to 629.6 cases per 100,000 population. Gonorrhea rates also decreased by 19.9% among Asian/Pacific Islanders from 26.7 to 21.4 cases per 100,000 population. Since 2000, the gonorrhea rate among whites increased 19.8% (33.3 per 100,000 in 2004), American Indian/Alaska Natives increased 19.4% (117.7 per 100,000 in 2004), and Hispanics increased 3.8% (71.3 per 100,000 in 2004) (Figure 15 and Table 21B). In 2004, the gonorrhea rate among African-Americans was 19 times greater than the rate for whites, down from 28 times greater in 2000.
- In 2004, the overall gonorrhea rate was highest for 20- to 24-year-olds (497.8). Among females in 2004, 15- to 19- and 20- to 24-year-olds had the highest rates of gonorrhea (610.9 and 569.1, respectively); among males, 20- to 24-year-olds had the highest rate (430.6) (Figure 16 and Table 20). Since 2000 there has been a 15.4% decrease in the rate of gonorrhea among 15- to 19-year-olds, and a 15.2% decrease among 20- to 24-year olds, greater than in any other age group. Decreases over this time period were greater among male 15- to 19-year olds and 20- to 24-year olds (21.1% and 22.3% respectively) than among female 15- to 19-year olds and 20- to 24-year olds (12.7% and 18.4%, respectively) (Table 20).
- The overall rate in African-American men decreased 22.2% from 862.0 per 100,000 population in 2000 to 670.3 in 2004. Decreases were seen in all age groups of African-American men in this time period. The overall rate in white males increased 20.2% from 21.8 per 100,000 population in 2000 to 26.2 in

2004. Rates among Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native men showed no consistent trends over this time period (Table 21B).

- The overall rate among African-American women decreased 15.6% from 702.1 per 100,000 population in 2000 to 592.5 in 2004. Decreases were noted in 15- to 19-year-old African-American women (19.7% from 2000 through 2004). However, 15- to 19-year-old African-American women still have the highest gonorrhea rate of any group (2,790.5 per 100,000 population). Rates among white women increased 19% from 33.6 per 100,000 population in 2000 to 40.0 in 2004. Increases among white women were seen in nearly all age groups (Table 21B).
- In summary, in those populations where rates are highest, African-Americans and adolescents, significant decreases were observed. Increases were observed in whites; other groups showed no change.

Gonorrhea Prevalence Monitoring Projects

- Gonorrhea test positivity data are available from a variety of settings. In 2004, the median state-specific gonorrhea test positivity among 15- to 24-year-old women screened in selected family planning clinics in 38 states, Puerto Rico, the District of Columbia, and the Virgin Islands was 0.88% (range 0.1% to 4.2%) (Figure 19).
- For women in this age group attending selected prenatal clinics in 19 states, Puerto Rico, and the Virgin Islands, the median positivity was 1% (range 0% to 3.5%) (Figure F).
- For 16- to 24-year-old women entering the National Job Training Program in 33 states in 2004, the median state-specific gonorrhea prevalence was 2.4% (range 0% to 6.4%) in 2004 (Figure N). Among men entering the program from 8 states in 2004, the median state-specific gonorrhea positivity was 3.7% (range 1% to 5.5%) (Figure O).
- The median positivity for gonorrhea in women entering 34 juvenile corrections facilities was 4.5% (range 0% to 16.6%), and in men entering 49 juvenile corrections facilities was 0.8% (range 0% to 18.2%) (Table CC).

Gonococcal Isolate Surveillance Project

- Antimicrobial resistance remains an important consideration in the treatment of gonorrhea.⁶⁻⁸ Overall, 15.9% of isolates collected in 2004 in 28 STD clinics by the Gonococcal Isolate Surveillance Project (GISP) were resistant to penicillin, tetracycline, or both (Figure 21).
- Resistance to ciprofloxacin (a fluoroquinolone) was first identified in GISP in 1991. From 1991 through 1998, fewer than nine ciprofloxacin-resistant isolates were identified each year and such isolates were identified in only a few GISP clinics. In 2000, similar to 1999, 19 (0.4%) ciprofloxacin-resistant GISP isolates were identified in 7 GISP clinics. In 2001, 38 (0.7%) ciprofloxacin-resistant GISP isolates were identified in 6 clinics; in 2002, 116 (2.2%) such isolates were identified in 13 clinics (Figure 22) and in 2003, 270 (4.1%) were identified in 21 clinics. In 2004, 429 (6.8%) isolates submitted to GISP demonstrated resistance to ciprofloxacin.

- In Honolulu, the prevalence of ciprofloxacin-resistance identified remained high. In 2004, 21 (22.8%) of 92 isolates submitted from Honolulu demonstrated ciprofloxacin-resistance, up from 16 (13.3%) of 120 isolates in 2003. At Tripler Army Medical Center, in Hawaii, 2 (28.6%) of 7 isolates tested in 2004 demonstrated resistance to ciprofloxacin. This high proportion of ciprofloxacin-resistant isolates in Hawaii continues to reinforce the recommendation made by CDC in 2000 that fluoroquinolones not be used to treat gonococcal infections acquired in Hawaii.⁶
- In California, increases in the number of isolates resistant to ciprofloxacin were identified in 4 of 5 GISP sites, while one site, Orange County, experienced a decrease from 31.5% in 2003 to 20.5% in 2004. In Long Beach, 25% of isolates were ciprofloxacin-resistant compared with 19.4% in 2003; in San Francisco, 24.3% were resistant in 2004 compared to 19.2% in 2003; in San Diego, 20.6% were resistant in 2004 compared to 13.2% in 2003; in Los Angeles, 13.8% were resistant compared to 12.4% in 2003. The high prevalence in California reinforces the CDC and California STD Program recommendations that fluoroquinolones no longer be used for gonorrhea treatment in California.
- In other west coast states, GISP sites experienced large increases in ciprofloxacin-resistance. In Seattle the prevalence of resistant isolates submitted to GISP doubled from 18 (7%) of 258 in 2003 to 38 (16.2%) of 235 in 2004, while in Portland the prevalence nearly quadrupled, from 4 (3%) of 132 in 2003 to 22 (11.5%) of 191 in 2004.
- Prevalence of ciprofloxacin-resistance also increased in many GISP sites outside California, Hawaii, Washington and Oregon in 2004. Substantial increases occurred in Denver, Miami, Minneapolis and Phoenix, while smaller increases occurred in 8 other GISP sites. In Denver, ciprofloxacin-resistance increased from 0.7% in 2003 to 8.3% in 2004. In Miami resistance increased from 2.1% in 2003 to 6.8% in 2004; in Minneapolis it increased from 2.3% in 2003 to 9.3% in 2004; in Phoenix it increased from 2.6% in 2003 to 6.6% in 2004. Atlanta, Baltimore, Chicago, Dallas, Greensboro, New Orleans, Oklahoma City and Philadelphia saw increases in fluoroquinolone-resistant *Neisseria gonorrhoeae* (QRNG) prevalence, but to a lesser extent. Sites that saw ciprofloxacin-resistant isolates for the first time in 2004 included Atlanta, Greensboro, and Oklahoma City.
- The prevalence of ciprofloxacin-resistance did not change from 2003 in several GISP sites: Cincinnati – 0.3%, Cleveland – 0.4%, and Las Vegas – 2.4%. Only Albuquerque, Birmingham, Detroit and St. Louis did not identify ciprofloxacin-resistant isolates during 2004.
- Overall, outside of Hawaii and California, 3.6% of isolates were ciprofloxacin-resistant in 2004. Looking at sites outside Hawaii, California and Washington, areas where fluoroquinolones are no longer recommended for treatment of any gonococcal cases, 3% of isolates were resistant. Additional information on antimicrobial susceptibility data and treatment recommendations from state and local health departments may be found in the 2004 GISP report⁷ or the GISP website (<http://www.cdc.gov/std/GISP>).
- The number of fluoroquinolone-resistant *Neisseria gonorrhoeae* (QRNG) isolates from men who have sex with men (MSM) continued to increase in 2004 to 286

(23.8%). During the same time period, the number of these isolates from heterosexuals increased from 79 (1.5%) in 2003 to 136 (2.9%) (Figure 23). In 2004, CDC recommended that fluoroquinolones no longer be used to treat gonorrhea among MSM.⁹

- To date, cephalosporin resistance has not been identified in GISP and the proportion of GISP isolates demonstrating decreased susceptibility to ceftriaxone or cefixime has remained very low over time. In 2001, three GISP isolates with decreased susceptibility to cefixime were also found to be resistant to penicillin, tetracycline, and ciprofloxacin; such multi-drug resistance in combination with decreased susceptibility to cefixime had not previously been identified in the United States.¹⁰ In 2004, two GISP isolates had decreased susceptibility to cefixime; one of those isolates demonstrated the same resistance pattern as the 2001 isolates described above. In 2004, no GISP isolates had decreased susceptibility to ceftriaxone.
- The proportion of GISP isolates demonstrating elevated minimum inhibitory concentrations (MICs) to azithromycin has been increasing since GISP began monitoring azithromycin susceptibility in 1992. In 1992, there were no isolates with azithromycin MIC ≥ 1.0 $\mu\text{g/ml}$ but in 2004 there were 57 (0.9%) such isolates, compared with 26 (0.4%) in 2003.
- Additional information about gonorrhea in racial and ethnic minority populations, adolescents, men who have sex with men, and other at risk populations can be found in the **Special Focus Profiles**.

¹ Cohen MS, Hoffman IF, Royce RA, et al. Reduction of concentration of HIV-1 in semen after treatment of urethritis: implications for prevention of sexual transmission of HIV-1. *Lancet* 1997;349:1868-73.

² Centers for Disease Control and Prevention. Gonorrhea – United States, 1998. *MMWR* 2000;49:538-42.

³ Sexually Transmitted Diseases in America: How Many Cases and At What Cost? Prepared for the Kaiser Family Foundation by: American Social Health Association, December 1998, ASHA: Research Triangle Park, NC, Kaiser Family Foundation: Menlo Park, CA 94025.

⁴ Fox KK, Whittington W, Levine WC, Moran JS, Zaidi AA, Nakashima AN. Gonorrhea in the United States, 1981-1996: demographic and geographic trends. *Sexually Transmitted Diseases* 1998;25(7):386-93.

⁵ U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

⁶ Centers for Disease Control and Prevention. Fluoroquinolone-resistance in *Neisseria gonorrhoeae*, Hawaii, 1999, and decreased susceptibility to azithromycin in *N. gonorrhoeae*, Missouri, 1999. *MMWR* 2000;49:833-837.

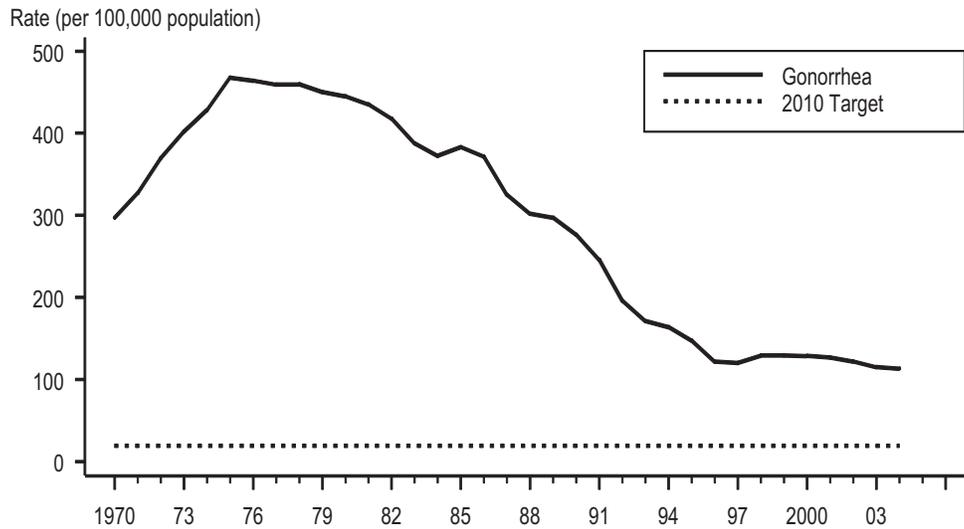
⁷ Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2004 Supplement: Gonococcal Isolate Surveillance Project (GISP) Annual Report 2004*. Atlanta, GA: U.S. Department of Health and Human Services (available first quarter 2006).

⁸ Centers for Disease Control and Prevention. Increases in fluoroquinolone-resistant *Neisseria gonorrhoeae* – Hawaii and California, 2001 *MMWR* 2002;51:1041-1044.

⁹ Centers for Disease Control and Prevention. Increases in fluoroquinolone-resistant *Neisseria gonorrhoeae* among men who have sex with men – United States, 2003, and revised recommendations for gonorrhea treatment, 2004. *MMWR* 2004;53:335-338.

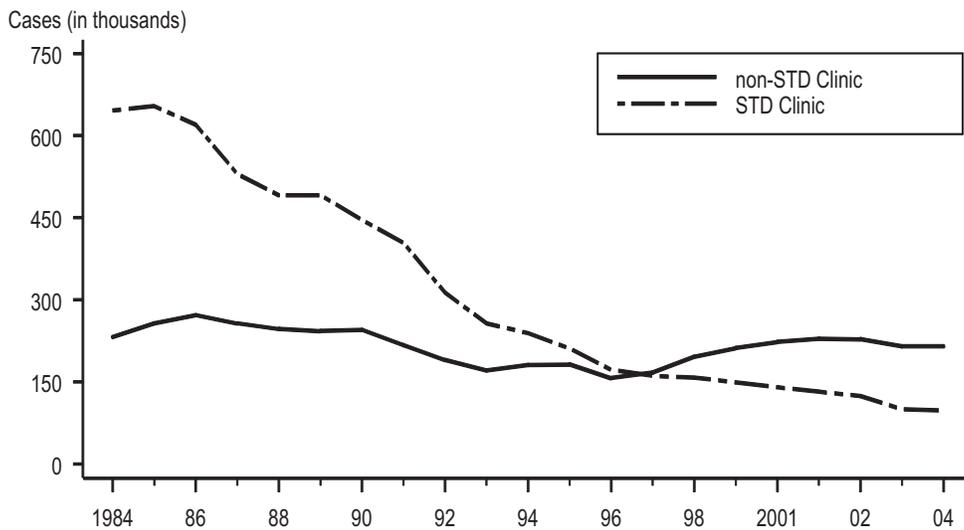
¹⁰ Wang SA, Lee MV, Iverson CJ, Ohye RG, Whiticar PM, Hale JA, Trees DL, Knapp JS, Effler PV, Weinstock HS. Multi-drug resistant *Neisseria gonorrhoeae* with decreased susceptibility to cefixime, Hawaii, 2001. *CID* 2003;37:849-52.

Figure 9. Gonorrhea — Rates: United States, 1970–2004 and the Healthy People 2010 target



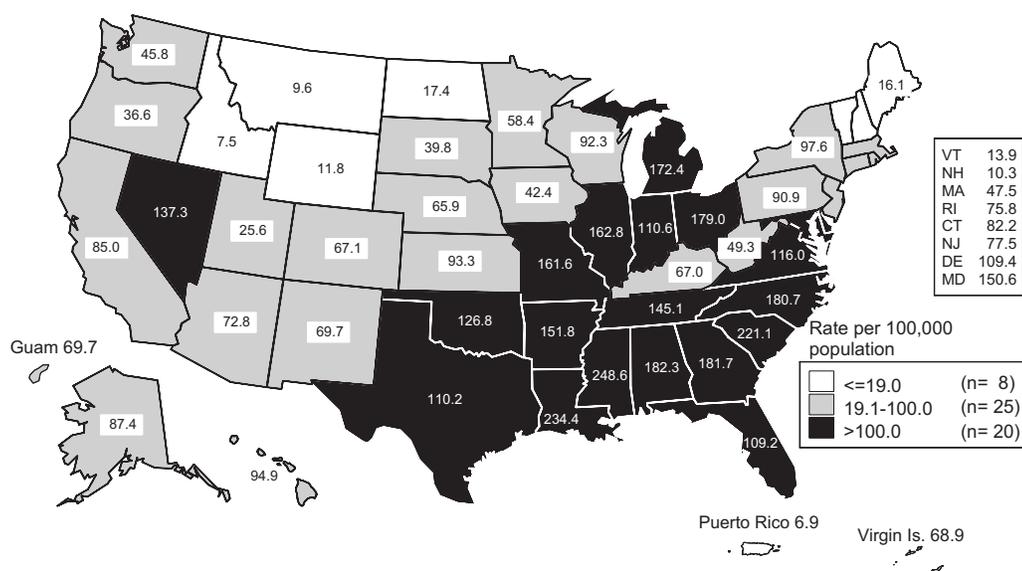
Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Figure 10. Gonorrhea — Reported cases by reporting source: United States, 1984-2004



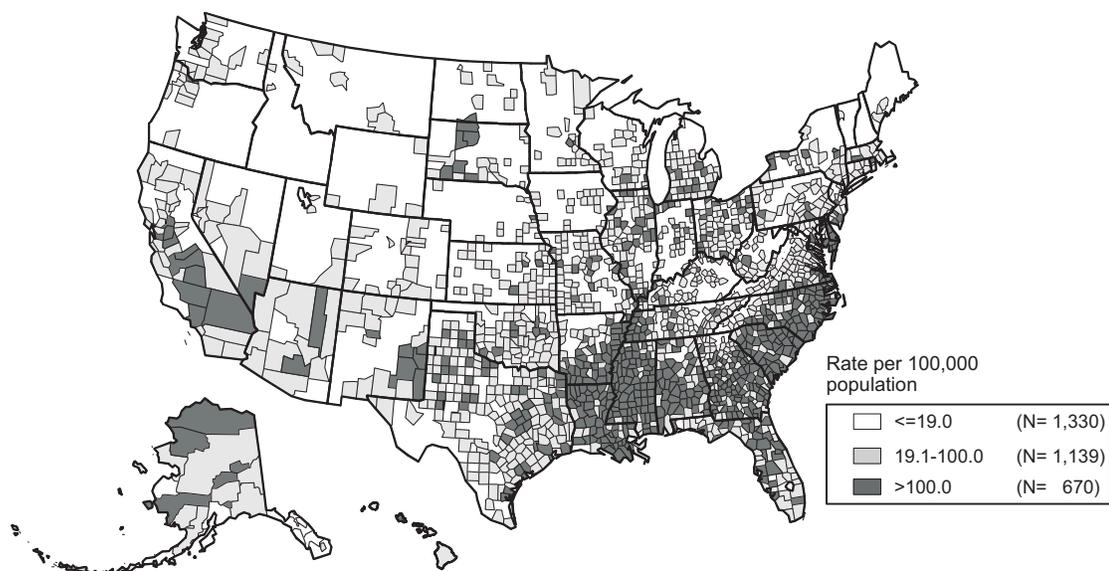
Note: Prior to 1996, the STD clinic source of report corresponded to public (clinic) source of report, and the non-STD clinic category corresponded to private source of report. See Appendix (Reporting Sources, Table A2). After 1996, as states began reporting morbidity data electronically, the specific source of report (i.e., STD clinic) began to be reported from an increasing number of states.

Figure 11. Gonorrhea — Rates by state: United States and outlying areas, 2004



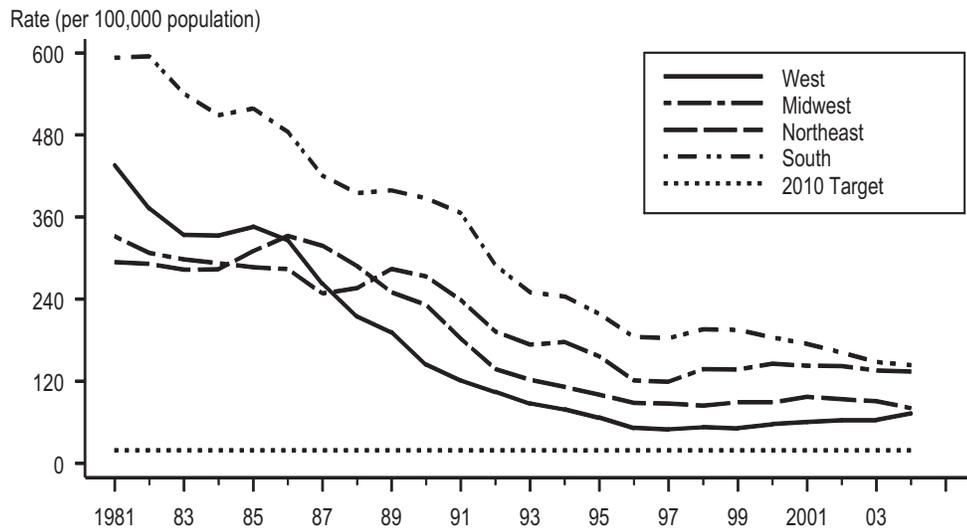
Note: The total rate of gonorrhea for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 112.1 per 100,000 population. The Healthy People 2010 target is 19.0 cases per 100,000 population.

Figure 12. Gonorrhea — Rates by county: United States, 2004



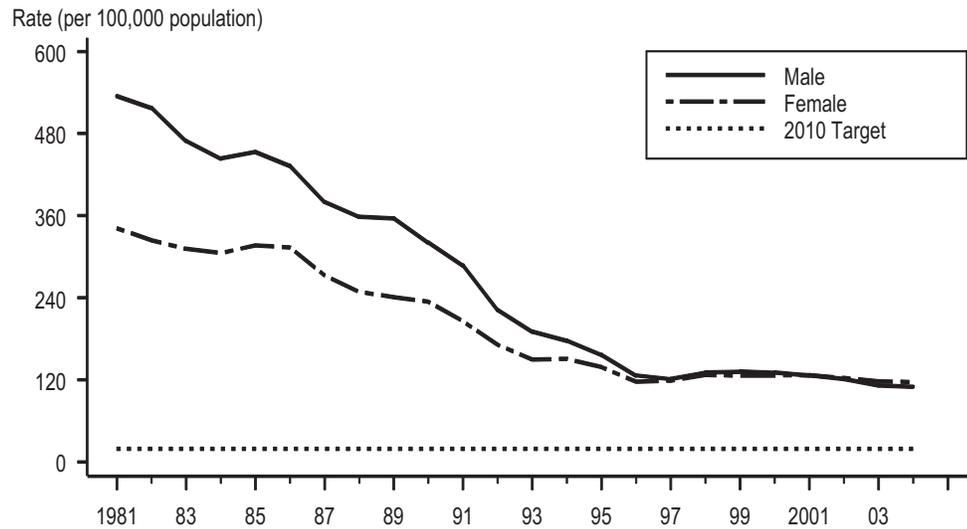
Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Figure 13. Gonorrhea — Rates by region: United States, 1981–2004 and the Healthy People 2010 target



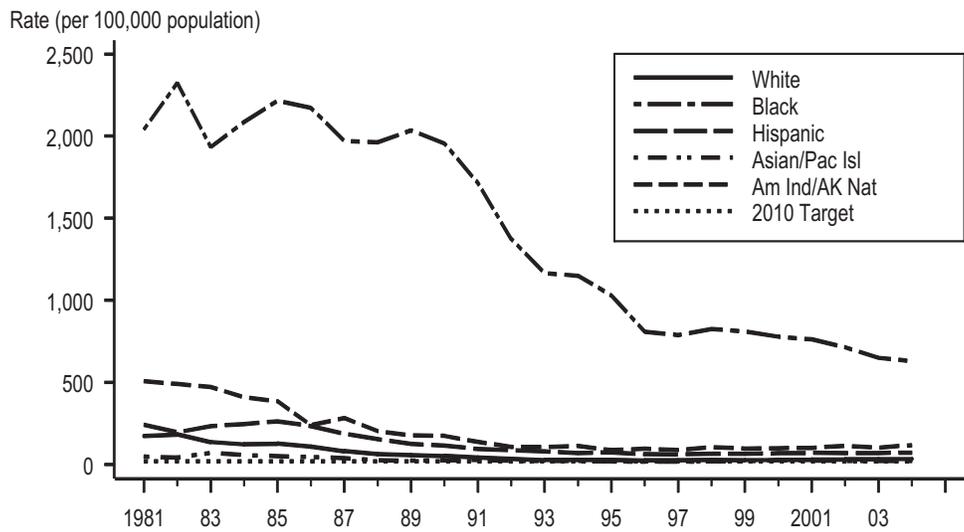
Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Figure 14. Gonorrhea — Rates by sex: United States, 1981–2004 and the Healthy People 2010 target



Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Figure 15. Gonorrhea — Rates by race and ethnicity: United States, 1981–2004 and the Healthy People 2010 target



Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Figure 16. Gonorrhea — Age- and sex-specific rates: United States, 2004

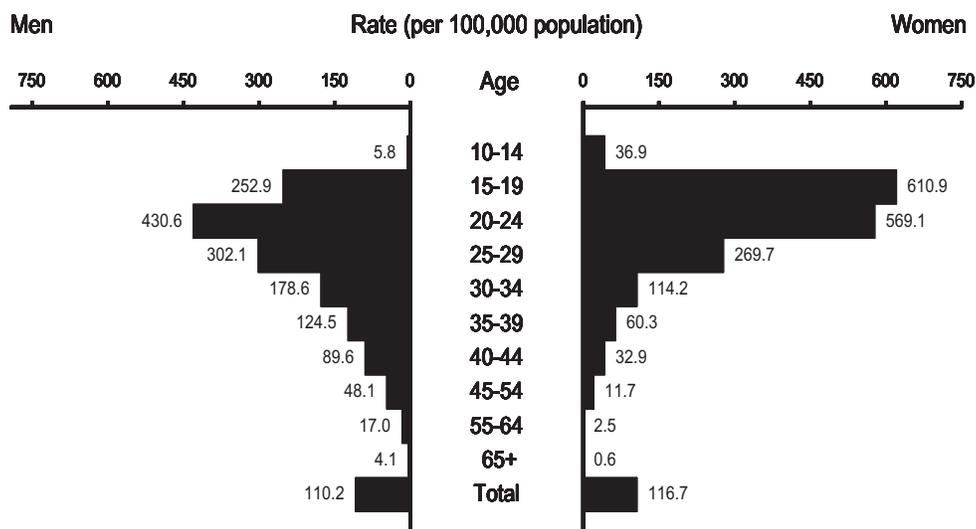


Figure 17. Gonorrhea — Age-specific rates among women 10 to 44 years of age: United States, 1981–2004

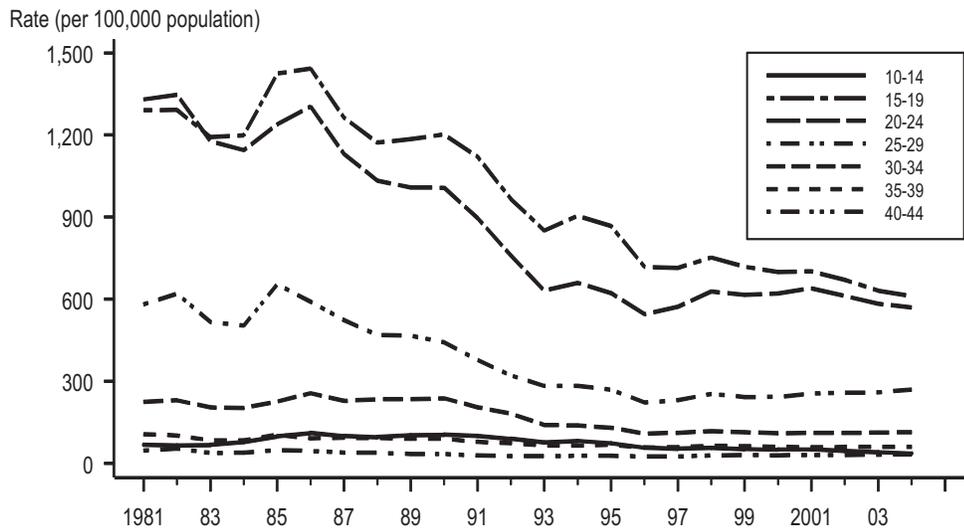


Figure 18. Gonorrhea — Age-specific rates among men 10 to 44 years of age: United States, 1981–2004

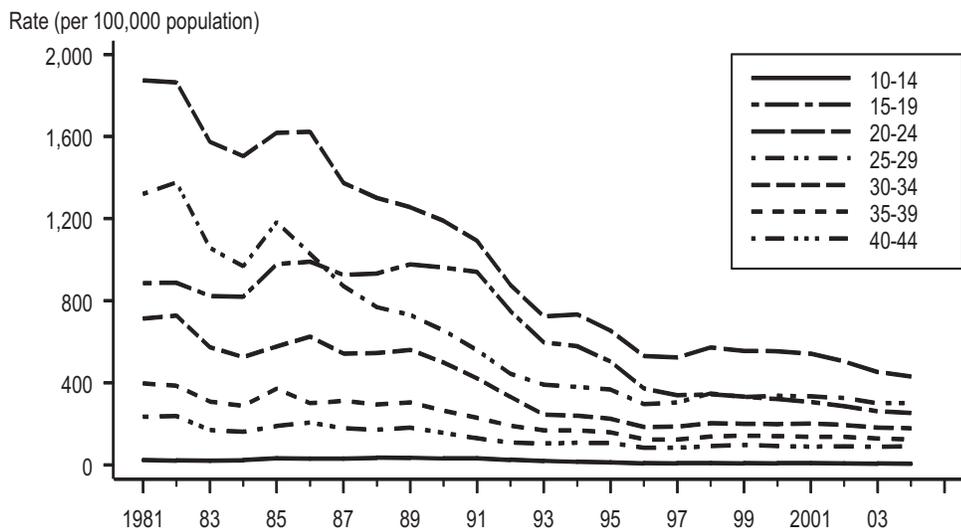
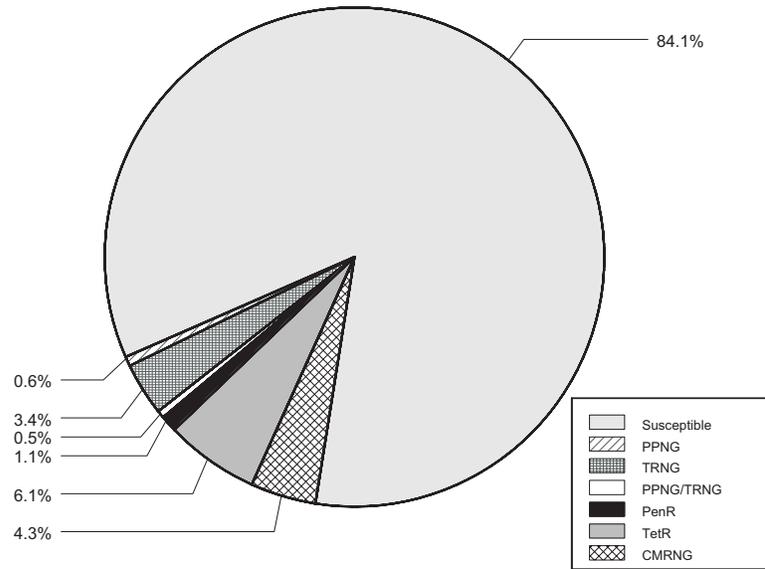
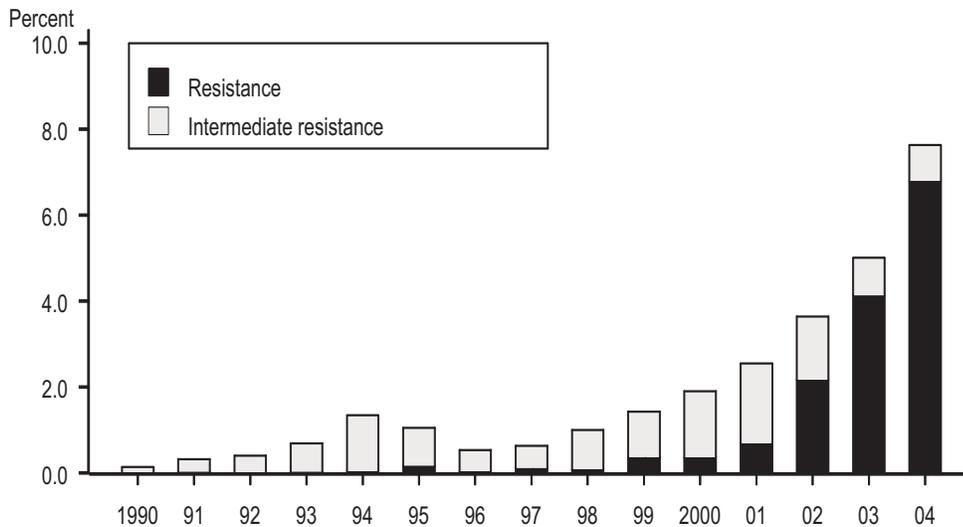


Figure 21. Gonococcal Isolate Surveillance Project (GISP) — Penicillin and tetracycline resistance among GISP isolates, 2004



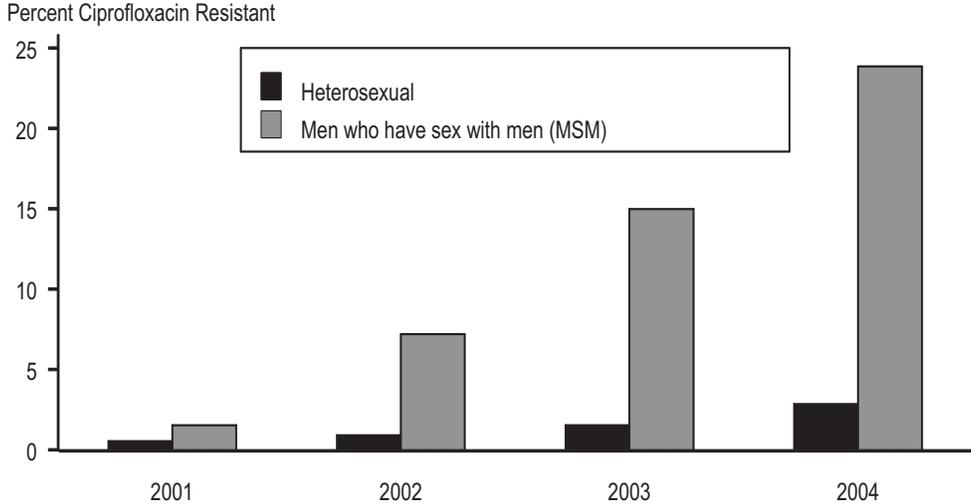
Note: PPNG=penicillinase-producing *N. gonorrhoeae*; TRNG=plasmid-mediated tetracycline-resistant *N. gonorrhoeae*; PPNG-TRNG=plasmid-mediated penicillin and tetracycline-resistant *N. gonorrhoeae*; PenR=chromosomally mediated penicillin-resistant *N. gonorrhoeae*; TetR=chromosomally mediated tetracycline-resistant *N. gonorrhoeae*; CMRNG=chromosomally mediated penicillin- and tetracycline-resistant *N. gonorrhoeae*.

Figure 22. Gonococcal Isolate Surveillance Project (GISP) — Percent of *Neisseria gonorrhoeae* isolates with resistance or intermediate resistance to ciprofloxacin, 1990–2004



Note: Resistant isolates have ciprofloxacin MICs $\geq 1 \mu\text{g/ml}$. Isolates with intermediate resistance have ciprofloxacin MICs of $0.125 - 0.5 \mu\text{g/ml}$. Susceptibility to ciprofloxacin was first measured in GISP in 1990.

Figure 23. Gonococcal Isolate Surveillance Project (GISP) — Percent of *Neisseria gonorrhoeae* isolates with resistance to ciprofloxacin by sexual behavior, 2001–2004



Syphilis

Syphilis, a genital ulcerative disease, facilitates the transmission of HIV and may be important in contributing to HIV transmission in those parts of the country where rates of both infections are high. Untreated early syphilis in pregnant women results in perinatal death in up to 40% of cases and, if acquired during the four years preceding pregnancy, may lead to infection of the fetus in over 70% of cases.¹

The rate of primary and secondary (P&S) syphilis reported in the United States decreased during the 1990s; in 2000, the rate was the lowest since reporting began in 1941 (Figure 24). The low rate of infectious syphilis and the concentration of the majority of syphilis cases in a small number of geographic areas in the United States led to the development of the CDC's National Plan to Eliminate Syphilis, which was announced by Surgeon General David Satcher in October 1999.² Collaboration with diverse organizations, public health professionals, the private medical community, and other partners working in the fields of STD and HIV is essential for the successful elimination of syphilis in the United States.³

Although the rate of P&S syphilis in the United States declined by 90% during 1990-2000, the rate of P&S syphilis increased from 2000 to 2004. Overall increases in rates during 2000-2004 were observed only among men. In 2004, for the first time in over ten years, the rate of primary and secondary syphilis among women did not decrease; it remained the same between 2003 and 2004 at 0.8 cases per 100,000 population.

Despite national progress toward syphilis elimination syphilis remains an important problem in the South and in urban areas in other regions of the country. Increases among men who have sex with men have occurred at least since 2000 and continue through 2004. These men have been characterized by high rates of HIV co-infection and high-risk sexual behavior.⁴⁻¹¹

- In 2004, P&S syphilis cases reported to CDC increased to 7,980 from 7,177 in 2003, an increase of 11.2%. The rate of P&S syphilis in the United States in 2004 (2.7 cases per 100,000 population) was 8% higher than the rate in 2003 (2.5 cases per 100,000 population), and it is greater than the Healthy People 2010 (HP2010) target of 0.2 case per 100,000 population (Figure 26, Table 1).¹²
- During 2003-2004, the number of cases of early latent syphilis reported to CDC decreased 7.1% (from 8,361 to 7,768) while the number of cases of late and late latent syphilis decreased 5.6% (from 18,319 to 17,300) (Table 1). The total number of cases of syphilis (all stages: P&S, early latent, late latent, and congenital syphilis) reported to CDC decreased 2.6% (from 34,289 to 33,401) during 2003-2004 (Table 1).
- The rate of P&S syphilis increased 11.9% among men (from 4.2 cases to 4.7 cases per 100,000 men) between 2003 and 2004 (Figure 30, Table 28). During this time, the rate remained unchanged among women (0.8 cases per 100,000 women) (Figure 30, Table 27).

- The male-to-female rate ratio for P&S syphilis has risen steadily since 1996 when it was 1.2 (Figure 32), suggesting an increase in syphilis among MSM during this time. The male-to-female rate ratio in 2002 was 3.4; in 2003 it was 5.2, and in 2004 it was 5.9.
- Between 2003 and 2004, the male-to-female rate ratio for P&S syphilis decreased among whites (from 14 to 10), among Asian/Pacific Islanders (from 19 to 11) and among American Indians/Alaska Natives (from 2.8 to 1.2). The male-to-female rate ratio increased among African-Americans (from 2.7 to 3.3) and among Hispanics (from 6.1 to 7.9). (Table 34B).
- An increase in the male-to-female rate ratio for P&S syphilis occurred in the District of Columbia, Puerto Rico and in 23 (68%) of 34 states that reported at least 25 cases in 2004.
- In 2004, syphilis rates increased for men and women in almost all racial and ethnic groups. African-Americans accounted for 41% of cases of P&S syphilis in 2004 and 39.2% in 2003. During 2003-2004, the rate of P&S syphilis increased 16.9% among African-Americans, reflecting a 22.2% increase in the number of cases among men (from 2,005 to 2,450) and a 1% increase among women (from 805 to 813). The rate among non-Hispanic whites increased 6.7%; cases among men increased 5.9% (from 2,783 to 2,947) and cases among women increased 12.8% (from 227 to 256). The rate among Hispanics increased 10.3%; cases among men increased 13.9% (from 1,001 to 1,140), and cases among women decreased 13.2% (from 159 to 138). The rate among Asian/Pacific Islanders increased 20%; cases among men increased (from 119 to 142) and increased among women (from 8 to 11). The rate among American Indian/Alaska Natives increased 14.3%; cases among men decreased (from 50 to 42), but increased among women (from 19 to 35). (Figure 31, Tables 34A and 34B).
- In 2004, the rate of P&S syphilis reported among African-Americans (9.0 cases per 100,000 population) was 6 times greater than the rate among non-Hispanic whites (1.6 cases per 100,000 population). This differential was more than that in 2003, when the rate of P&S syphilis among African-Americans was 5 times greater than the rate among non-Hispanic whites (Table 34B) and reflects an increase in syphilis among African-Americans for the first time in over a decade.
- The incidence of P&S syphilis was highest among women aged 20-24 years (3.0 cases per 100,000 population) and among men aged 35-39 (12.4 cases per 100,000 population) in 2004 (Figure 33, Table 33).
- The South accounted for 48% of P&S syphilis in 2004 and 45% in 2003. During 2003-2004, rates increased in all U.S. regions except the Midwest; rates increased 16.1% in the South (from 3.1 to 3.6 cases per 100,000 population), 4.8% in the Northeast (from 2.1 to 2.2), and 7.4% in the West (from 2.7 to 2.9); the rate remained the same in the Midwest at 1.6. The 2004 rates in all regions were greater than the HP2010 target of 0.2 case per 100,000 population (Figure 29, Table 26).
- In 2004, P&S syphilis rates in 6 states and one outlying area were less than or equal to the HP2010 national target of 0.2 case per 100,000 population (Figure 27, Table 24). Nine states and two outlying areas reported five or fewer cases of P&S syphilis in 2004 (Tables 24 and 26).

- In 2004, 2,488 (79.3%) of 3,139 counties in the United States reported no cases of P&S syphilis compared with 2,530 (80.6%) counties reporting no cases in 2003. Of 651 counties reporting at least one case of P&S syphilis in 2004, 5 (0.8%) had rates at or below the HP2010 target of 0.2 case per 100,000 population. Rates of P&S syphilis were above the HP2010 target for 646 counties in 2004 (Figure 28). These 646 counties (20.6% of the total number of counties in the United States) accounted for 99.2% of the total P&S syphilis cases reported in 2004.
- In 2004, half of the total number of P&S syphilis cases were reported from 19 counties and 1 city (Table 25).
- The overall rate of P&S syphilis in 2004 for 63 selected large U.S. cities (6.7 cases per 100,000 population) increased 9.8% from the rate in 2003 (Table 30). Rates exceeded the HP2010 target of 0.2 case per 100,000 population in all but 1 of the 63 cities in 2004 (Table 29).
- During 1990-2004, the proportion of P&S syphilis cases reported from sources other than STD clinics increased from 25.6% to 64.4% (Figure 25). During 2000-2004, the number of cases reported from non-STD clinic sources increased each year and the number of cases reported from STD clinics decreased each year.

Congenital Syphilis

- Between 2003 and 2004, the overall rate of congenital syphilis decreased 17.8% in the United States, from 10.7 to 8.8 cases per 100,000 live births (Figure 37, Table 39). The continuing decline in the rate of congenital syphilis (Figure 37) likely reflects the substantial reduction in the rate of P&S syphilis among women that has occurred during the last decade (Figure 36).^{13,14}
- During 1991-2004, the average yearly percentage decrease in the congenital syphilis rate was 17.2% (Table 39). The average yearly percentage decrease in the rate of P&S syphilis among women during 1991-2004 was 21.4%. Overall, there has been a 92% decrease in cases of congenital syphilis since 1991.
- In 2004, 31 states and one outlying area had rates of congenital syphilis that exceeded the HP2010 target of 1.0 case per 100,000 live births (Tables 40-41).
- Thirty-two (51%) of 63 selected cities in the United States had congenital syphilis rates greater than the HP2010 target of 1.0 case per 100,000 live births in 2004 (Table 42). All of these cities had rates that were more than eight times the HP2010 target.
- Additional information about syphilis and congenital syphilis in racial and ethnic minority populations, adolescents, men who have sex with men, and other at risk populations can be found in the **Special Focus Profiles**.

¹ Ingraham NR. The value of penicillin alone in the prevention and treatment of congenital syphilis. *Acta Derm Venereol* 31 (suppl 24):60,1951.

² Division of STD Prevention. *The National Plan to Eliminate Syphilis from the United States*. National Center for HIV, STD, and TB Prevention, Centers for Disease Control and Prevention, 1999.

- ³ Centers for Disease Control and Prevention. Primary and secondary syphilis – United States, 1999. *MMWR* 2000;50:113-117.
- ⁴ Centers for Disease Control and Prevention. Resurgent bacterial sexually transmitted disease among men who have sex with men – King County, Washington, 1997-1999. *MMWR* 1999;48:773-777.
- ⁵ Centers for Disease Control and Prevention. Outbreak of syphilis among men who have sex with men – Southern California, 2000. *MMWR* 2001;50(7):117-20.
- ⁶ Bronzan R, Echavarria L, Hermida J, Trepka M, Burns T, Fox, K. Syphilis among men who have sex with men (MSM) in Miami – Dade County, Florida [Abstract no. P135]. In: Program and abstracts of the 2002 National STD Prevention Conference, San Diego, California, March 4-7, 2002.
- ⁷ Centers for Disease Control and Prevention. Primary and secondary syphilis among men who have sex with men – New York City, 2001. *MMWR* 2002;51:853-6.
- ⁸ Chen SY, Gibson S, Katz MH, Klausner JD, Dilley JW, Schwarcz SK, Kellogg TA, McFarland W. Continuing increases in sexual risk behavior and sexually transmitted diseases among men who have sex with men: San Francisco, California, 1999-2001 [Letter]. *Am J Public Health* 2002;92:1387-8.
- ⁹ Ciesielski CA, Boghani S. HIV infection among men with infectious syphilis in Chicago, 1998-2000 [Abstract no. 12]. In: Program and abstracts of the 9th Conference on Retroviruses and Opportunistic Infections, Seattle, Washington, February 24-28, 2002.
- ¹⁰ D'Souza G, Lee JH, Paffel JM. Outbreak of syphilis among men who have sex with men in Houston, Texas. *Sexually Transmitted Diseases* 2003;30:872-3.
- ¹¹ Robinson BC, Chiliade PA, Lee C, Bautista J, Saenz G. Redirecting elimination efforts in response to the changing epidemiology of syphilis [Abstract 167]. In: Program and abstracts of the 2004 National STD Prevention Conference, Philadelphia, Pennsylvania, March 8-11, 2004.
- ¹² U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.
- ¹³ Centers for Disease Control and Prevention. Congenital syphilis – United States, 2002. *MMWR* 2004;53:716-9.
- ¹⁴ Centers for Disease Control and Prevention. Primary and secondary syphilis – United States, 2002. *MMWR* 2003;52(46):1117-20.

Figure 24. Syphilis — Reported cases by stage of infection: United States, 1941–2004

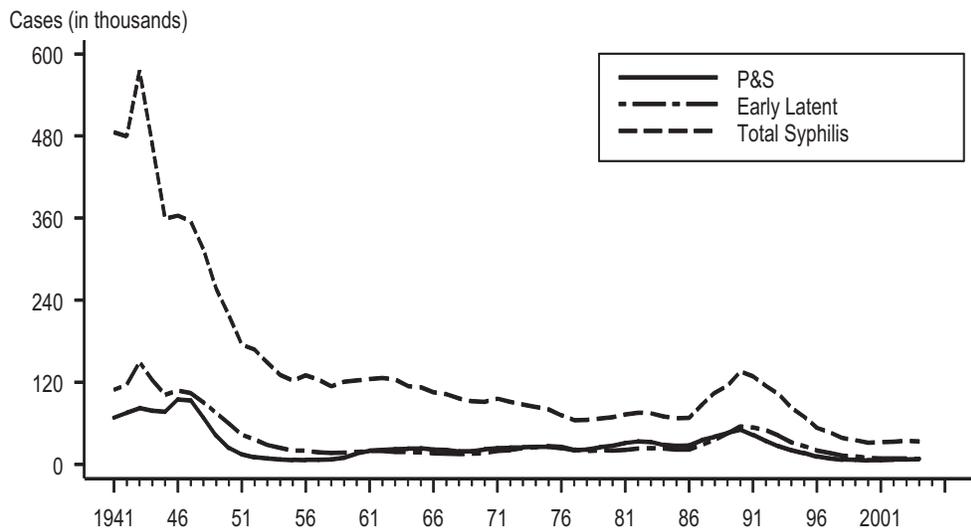
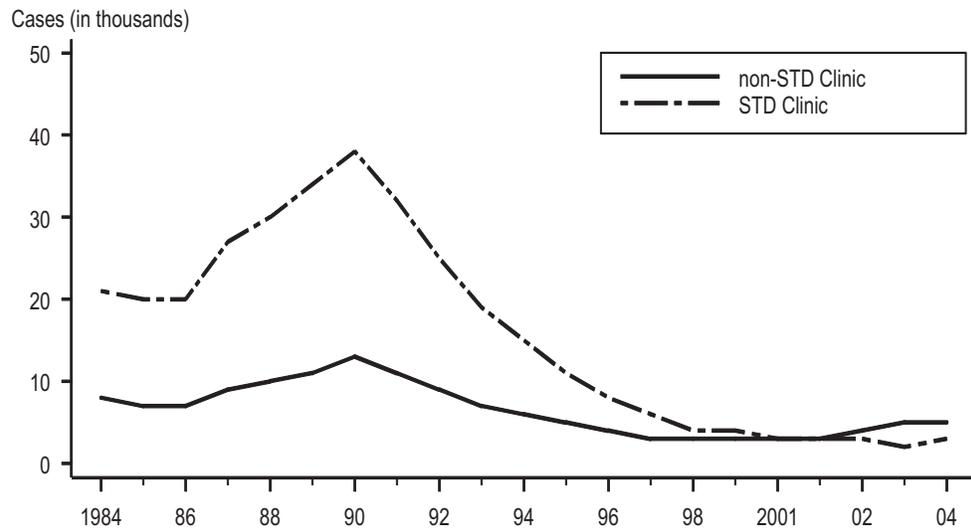
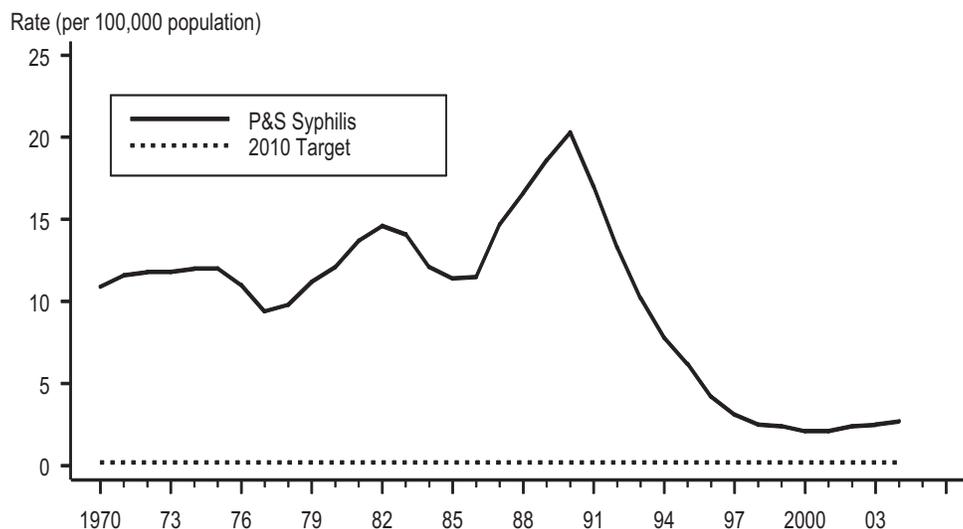


Figure 25. Primary and secondary syphilis — Reported cases by reporting source: United States, 1984–2004



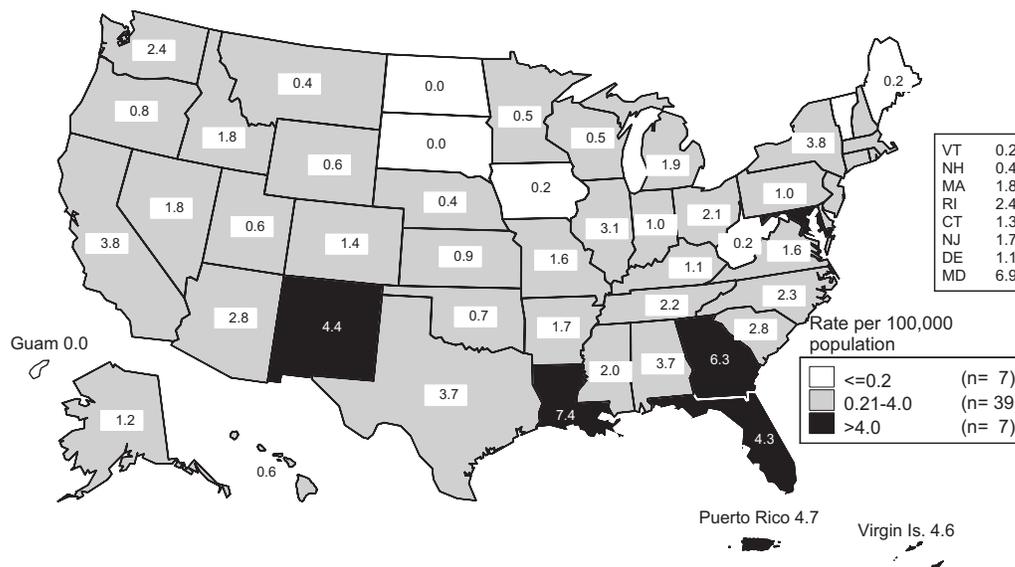
Note: Prior to 1996, the STD clinic source of report corresponded to public (clinic) source of report, and the non-STD clinic category corresponded to private source of report. See Appendix (Reporting Sources, Table A2). After 1996, as states began reporting morbidity data electronically, the specific source of report (i.e., STD clinic) began to be reported from an increasing number of states.

Figure 26. Primary and secondary syphilis — Rates: United States, 1970–2004 and the Healthy People 2010 target



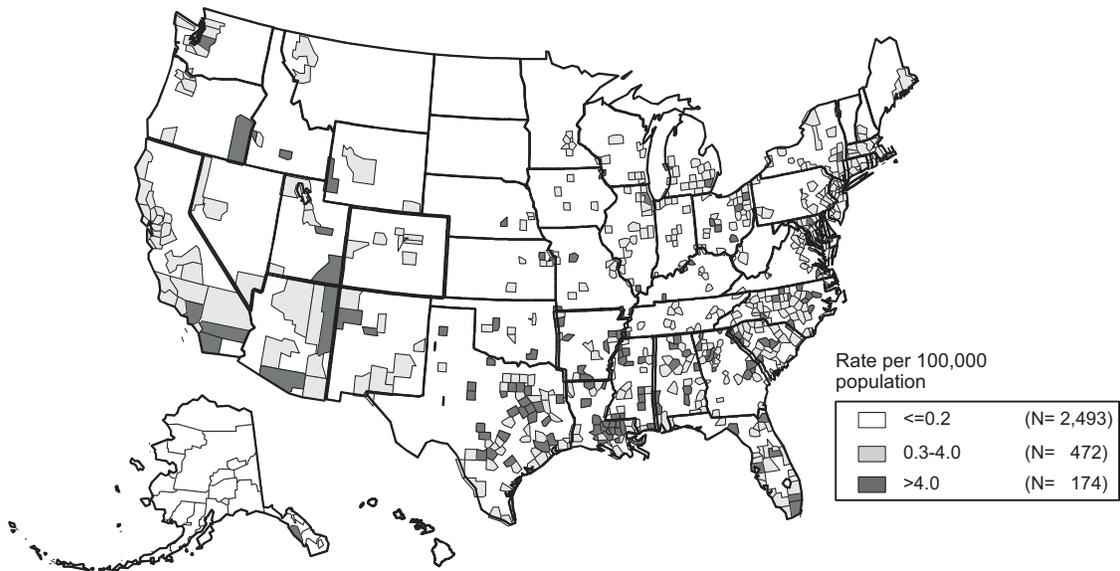
Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population.

Figure 27. Primary and secondary syphilis — Rates by state: United States and outlying areas, 2004



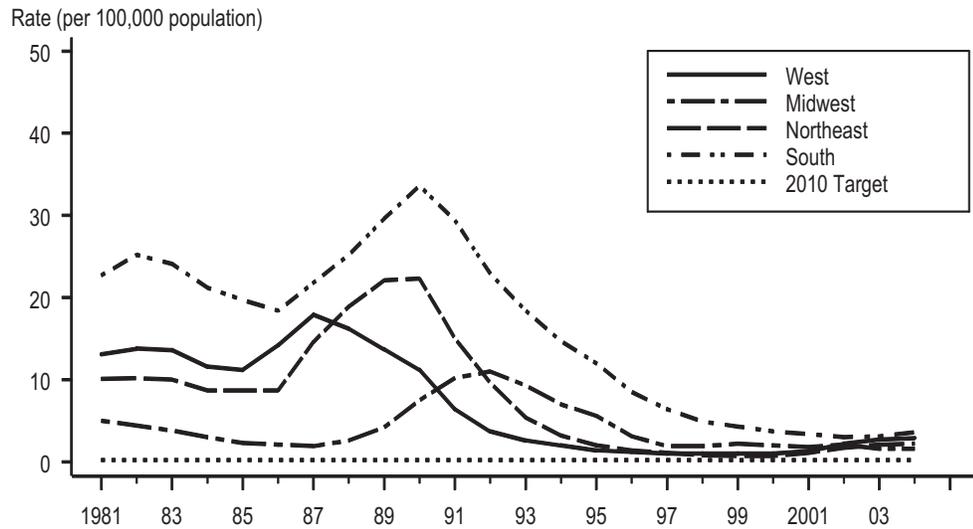
Note: The total rate of P&S syphilis for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 2.8 per 100,000 population. The Healthy People 2010 target is 0.2 case per 100,000 population.

Figure 28. Primary and secondary syphilis — Rates by county: United States, 2004



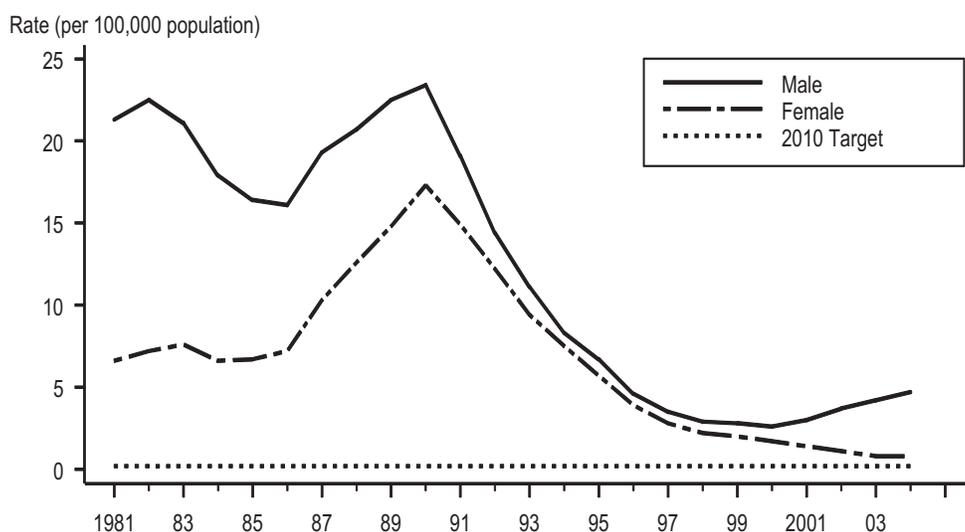
Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population. In 2004, 2,488 (79.3%) of 3,139 counties in the U.S. reported no cases of P&S syphilis.

Figure 29. Primary and secondary syphilis — Rates by region: United States, 1981–2004 and the Healthy People 2010 target



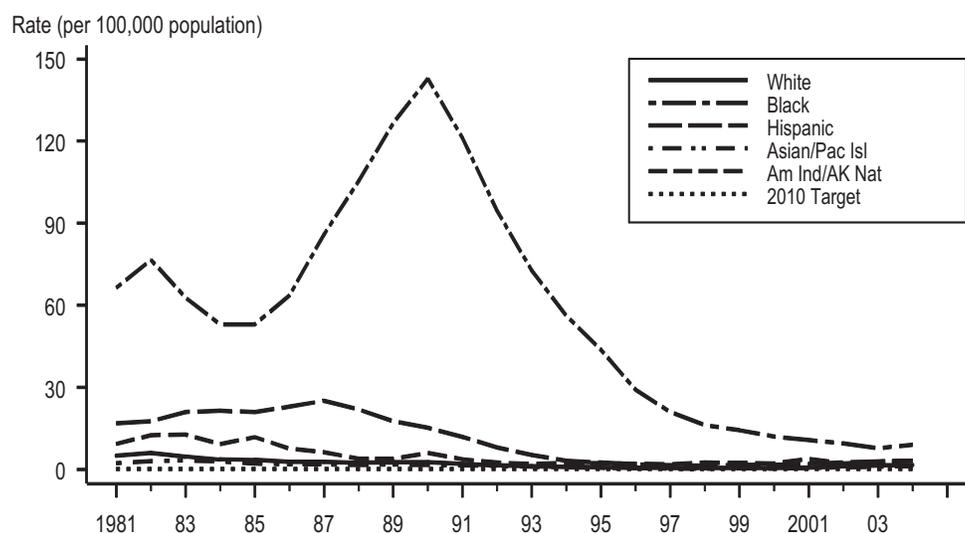
Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population.

Figure 30. Primary and secondary syphilis — Rates by sex: United States, 1981–2004 and the Healthy People 2010 target



Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population.

Figure 31. Primary and secondary syphilis — Rates by race and ethnicity: United States, 1981–2004 and the Healthy People 2010 target



Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population.

Figure 32. Primary and secondary syphilis — Male-to-female rate ratios: United States, 1981–2004

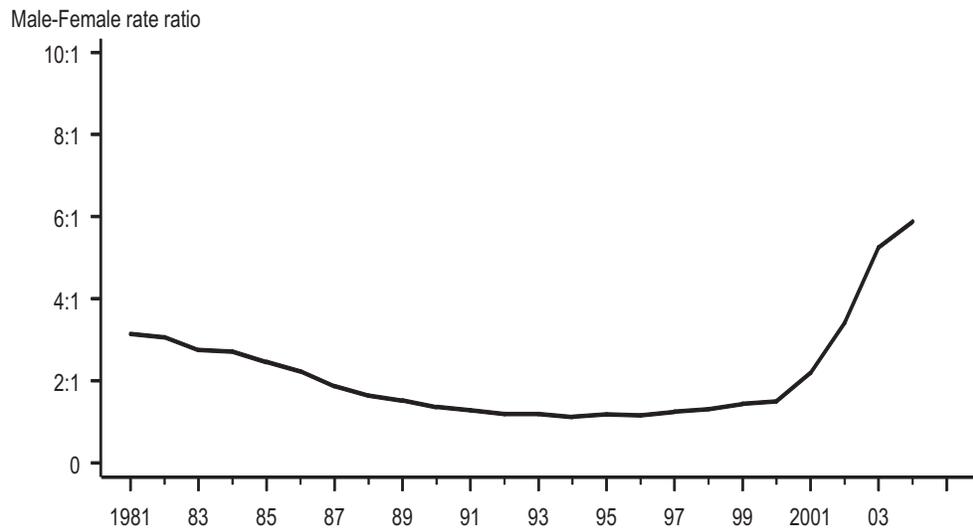
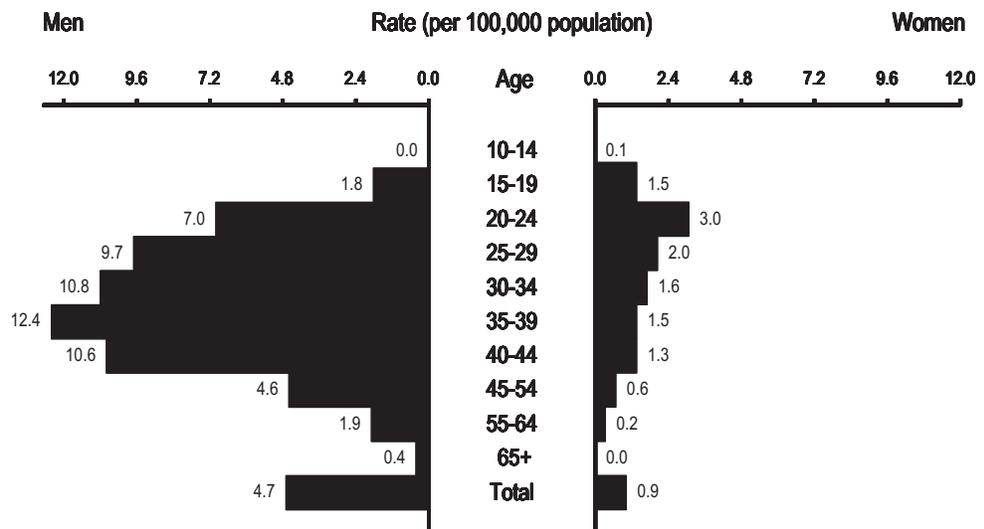


Figure 33. Primary and secondary syphilis — Age- and sex-specific rates: United States, 2004



Note: See Table 33.

Figure 34. Primary and secondary syphilis — Age-specific rates among women 10 to 44 years of age: United States, 1981–2004

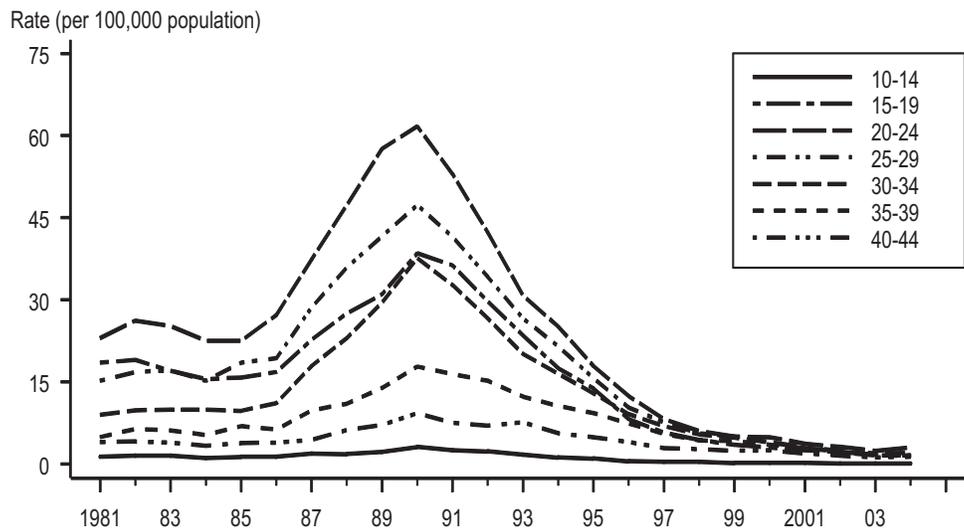


Figure 35. Primary and secondary syphilis — Age-specific rates among men 10 to 44 years of age: United States, 1981–2004

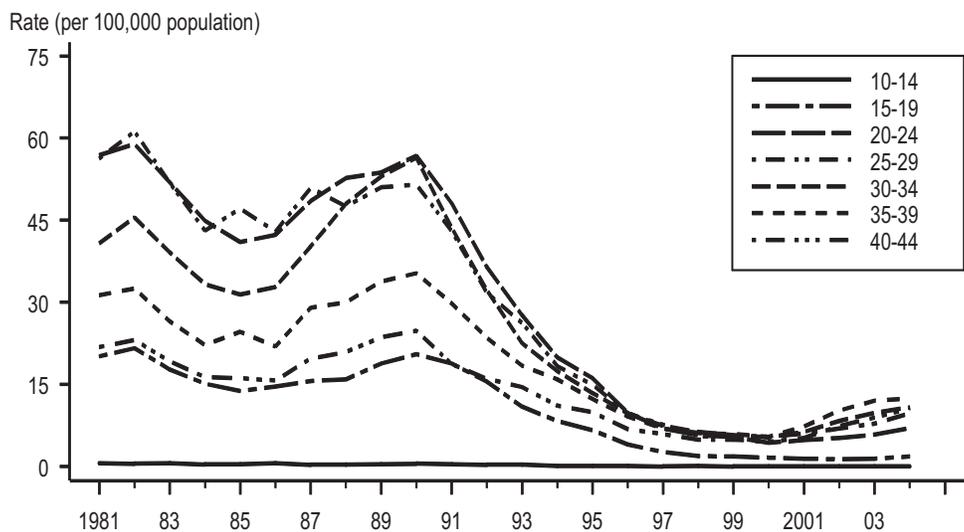
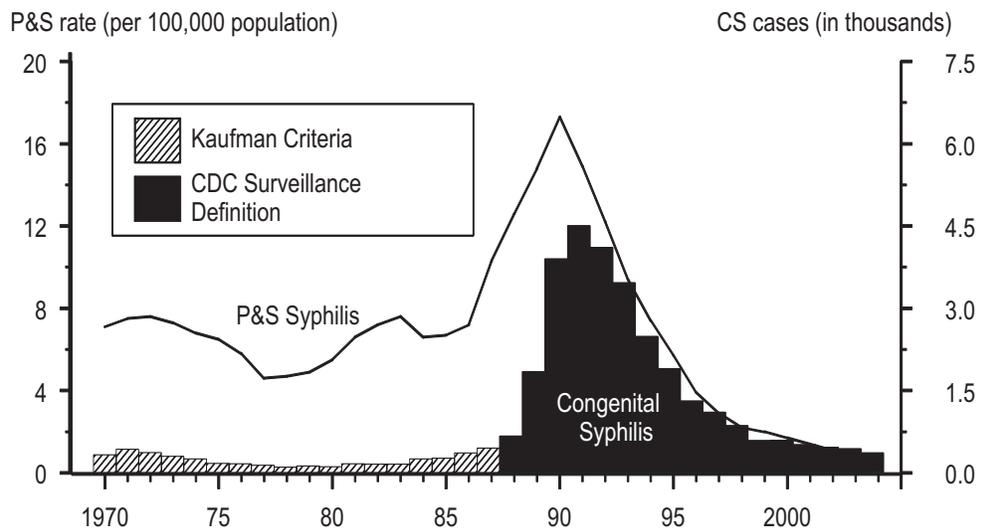
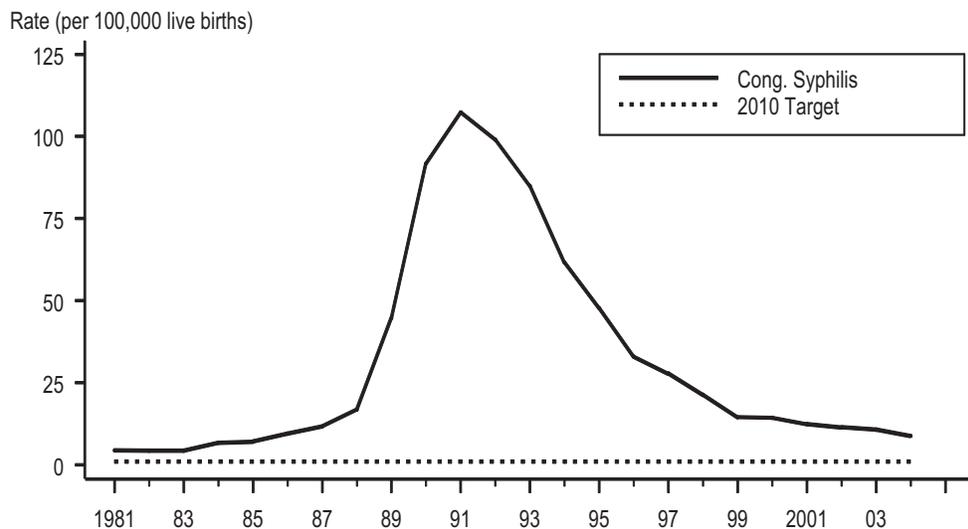


Figure 36. Congenital syphilis — Reported cases for infants <1 year of age and rates of primary and secondary syphilis among women: United States, 1970–2004



Note: The surveillance case definition for congenital syphilis changed in 1988. See Appendix (Congenital Syphilis Morbidity Reporting). Case counts for congenital syphilis shown in this graph correspond to those listed in Table 39.

Figure 37. Congenital syphilis — Rates for infants <1 year of age: United States, 1981–2004 and the Healthy People 2010 target



Note: The Healthy People 2010 target for congenital syphilis is 1.0 case per 100,000 live births. The surveillance case definition for congenital syphilis changed in 1988. See Appendix (Congenital Syphilis Morbidity Reporting).

Other Sexually Transmitted Diseases

Chancroid

Since 1987, reported cases of chancroid had declined steadily until 2001 when 38 cases were reported (Figure 38, Table 1). In 2004, 30 cases of chancroid were reported in the United States. Only 16 states and one outlying area reported one or more cases of chancroid in 2004 (Table 45). Although the overall decline in reported chancroid cases most likely reflects a decline in the incidence of this disease, these data should be interpreted with caution in view of the fact that *Haemophilus ducreyi*, the causative organism of chancroid, is difficult to culture and, as a result, this condition may be substantially under diagnosed.^{1,2}

Human Papillomavirus

Sentinel surveillance for cervical infection with high-risk human papillomavirus (HR-HPV types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68) is being conducted in 29 STD, family planning and primary care clinics in six locations (Boston, MA; Baltimore, MD; New Orleans, LA; Denver, CO; Seattle, WA; and Los Angeles, CA) as part of an effort to estimate national burden of disease and inform prevention efforts in the U.S. Testing was performed using a commercially available test for HR-HPV testing (Digene Hybrid Capture 2, Gaithersburg, MD). Interim results from 2003-2004 document an overall HR-HPV prevalence of 22.5%. Prevalence in STD clinics was 28%, 24% in Family Planning clinics, and 16% in Primary Care clinics. Prevalence by age group was: 14-19 years 35%; 20-29 years 29%; 30-39 years 14%; 40-49 years 12%; and 50-65 years 6%.³

Lymphogranuloma Venereum

Lymphogranuloma venereum (LGV) is a systemic, sexually transmitted disease caused by a type of *Chlamydia trachomatis*. Prevalent in developing countries, LGV has been relatively rare in industrialized countries. However, beginning in late 2003 and continuing to the present time, outbreaks of LGV proctitis among men who have sex with men (MSM), the majority of whom were HIV infected, have been reported in Europe.^{4,5} There is no national surveillance for LGV in the United States. In 1995, LGV was removed from the list of nationally notifiable diseases. However, reporting is mandated in 24 states, and some of these states continue to report cases of LGV to the CDC. In 2004, 27 cases of LGV were reported to the CDC. Studies are underway to identify LGV throughout the United States through genotypic confirmation.⁶ See www.cdc.gov/std for additional information.

Pelvic Inflammatory Disease

For data on Pelvic Inflammatory Disease (PID), see the **Special Focus Profile** on Women and Infants.

Other Sexually Transmitted Diseases

Case reporting data for genital herpes simplex virus (HSV), genital warts or other human papillomavirus infections, and trichomoniasis are not available. Trend data are limited to estimates of the office visits in physicians' office practices provided by the National Disease and Therapeutic Index (NDTI) (Figures 39-41 and Table 47).

¹ Schulte JM, Martich FA, Schmid GP. Chancroid in the United States, 1981-1990: Evidence for underreporting of cases. *MMWR* 1992;41(no. SS-3):57-61.

² Mertz KJ, Trees D, Levine WC, et al. Etiology of genital ulcers and prevalence of human immunodeficiency virus coinfection in 10 US cities. *J Infect Dis* 1998;178:1795-8.

³ Datta SD, Koutsky L, Douglas J, et al. Sentinel surveillance for human papillomavirus among women in the United States, 2003-2004. Program and abstracts of the 16th Biennial Meeting of the International Society for Sexually Transmitted Diseases Research; July 10-13, 2005; Amsterdam, The Netherlands. Abstract MO-306.

⁴ Centers for Disease Control and Prevention. Lymphogranuloma venereum among men who have sex with men – Netherlands, 2003-2004. *MMWR* 2004; 53:985-988.

⁵ Nieuwenhuis RF, Ossewaarde JM, Götz HM, Dees J, Thio HB, Thomeer MG, et al. Resurgence of lymphogranuloma venereum in Western Europe: an outbreak of *Chlamydia trachomatis* serovar L2 proctitis in the Netherlands among men who have sex with men. *Clin Infect Dis* 2004;39:996-1003.

⁶ McLean C, Lindstrom H, Wendt A, et al. Lymphogranuloma venereum in the United States, November 2004 through March 2005. Program and abstracts of the 16th Biennial Meeting of the International Society for Sexually Transmitted Diseases Research; July 10-13, 2005; Amsterdam, The Netherlands. Poster MP-138.

Figure 38. Chancroid — Reported cases: United States, 1981–2004

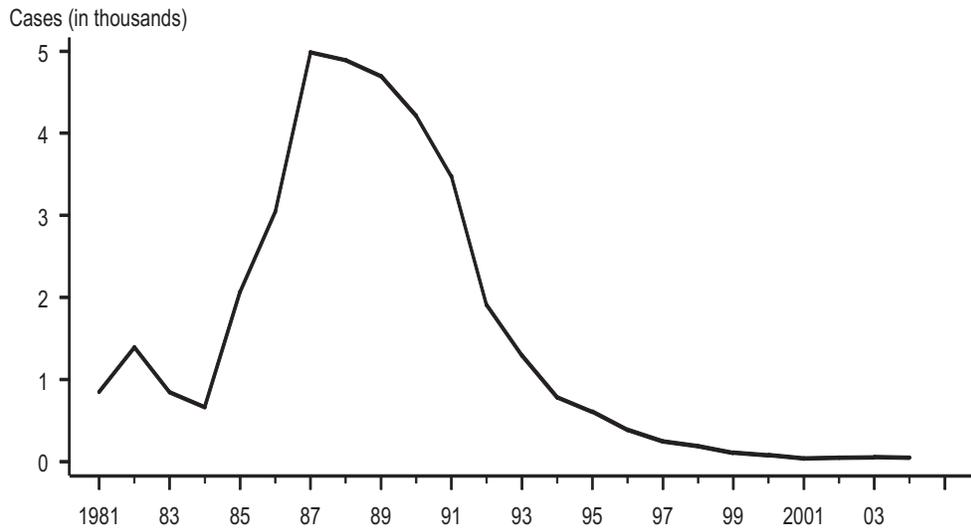
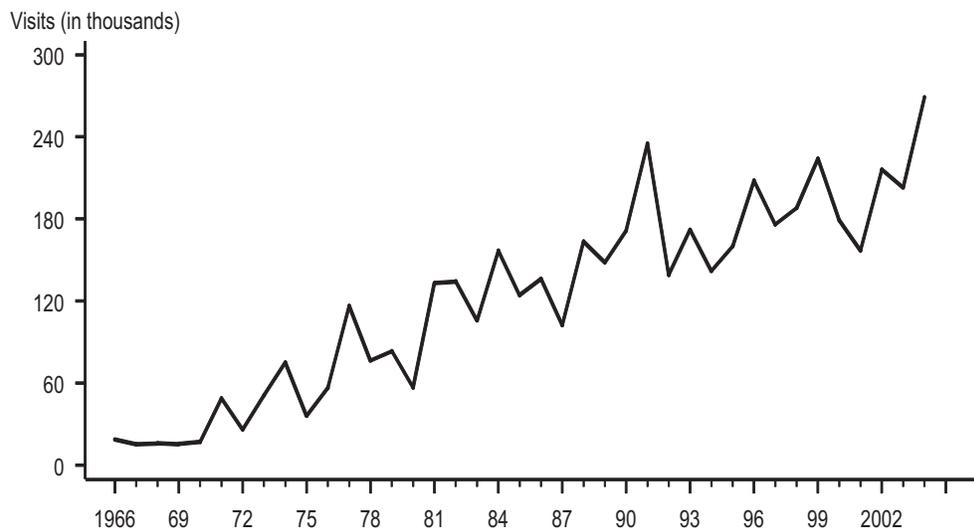


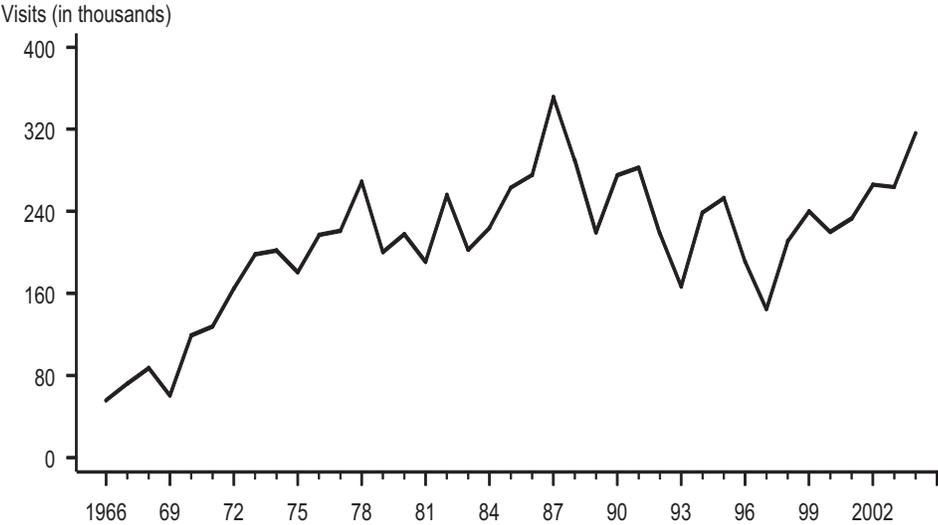
Figure 39. Genital herpes — Initial visits to physicians' offices: United States, 1966–2004



Note: See Appendix (Other Data Sources) and Table 47. The relative standard error for these estimates range from 45% to 60%.

SOURCE: National Disease and Therapeutic Index (IMS Health)

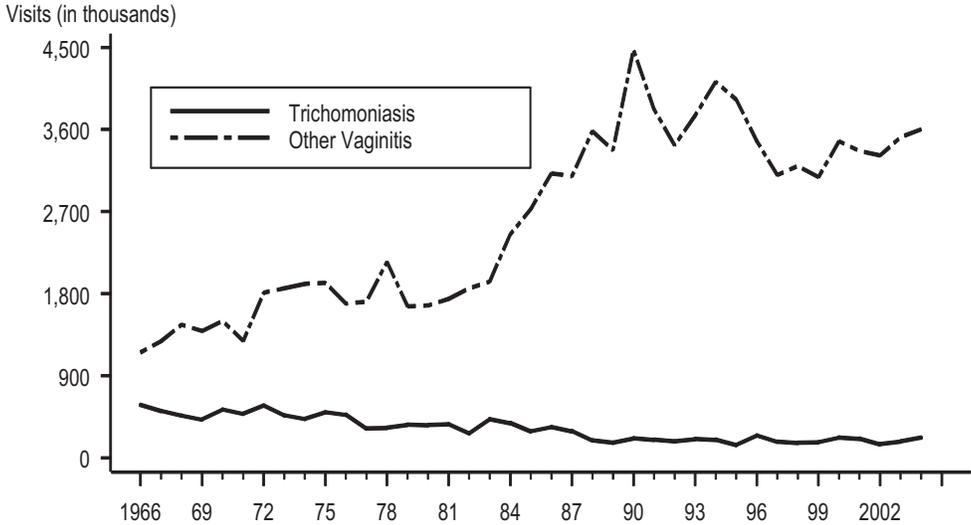
Figure 40. Genital warts — Initial visits to physicians’ offices: United States, 1966–2004



Note: See Appendix (Other Data Sources) and Table 47. The relative standard error for these estimates range from 40% to 60%.

SOURCE: National Disease and Therapeutic Index (IMS Health)

Figure 41. Trichomoniasis and other vaginal infections in women — Initial visits to physicians’ offices: United States, 1966–2004



Note: See Appendix (Other Data Sources) and Table 47. The relative standard error for these estimates range from 16% to 30% and for other vaginitis estimates range from 30% to 60%.

SOURCE: National Disease and Therapeutic Index (IMS Health)